



Bus Owner's Manual

International Chassis - 3200 Series



Congratulations, and thank you for purchasing a Krystal Enterprises Vehicle

You have taken ownership of a true luxury vehicle which is in a class all its own. We are providing this manual to familiarize you with your new Krystal Enterprises Professional Bus. This manual shall serve as a reference document for the operations and maintenance procedures that shall be required throughout the life of your vehicle. This edition covers all our International Chassis models, and is designed to be used in conjunction with the original chassis manufacturer's owner's literature, as well as all other component manufacturers literature.

IMPORTANT: PLEASE READ CAREFULLY

For your safety and the safety of others, we ask that you completely familiarize yourself with this manual, and all other operators manuals before you operate this vehicle for the first time.

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Pre-Trip Inspection (suggested minimum)

Any item not passing inspection, must be reported immediately, before operating vehicle

FAILURE OF HIGHLIGHTED ITEM(S) TO PASS INSPECTION WILL CAUSE VEHICLE TO BE GROUNDED

Item	Inspection Procedure	Pass	Fail
1	Check preventative maintenance schedule: for services due at present mileage		
2	Check operation of: drivers seat and seat belt		
3	Check operation of: steering wheel and shift levers		
4	Check operation of: turn indicators		
5	Check operation of: foot pedals and parking brake		
6	Check operation of: all gauges, for normal readings with engine running		
7	Check operation of: dash indicator lights with key on, engine not started, then again with engine started		
8	Check operation of ventilation system: heating, defrosters, fans and air conditioning		
9	Check: horn, wipers, washers, and mirrors for cleanliness, adjustment, operation and damage		
10	Check condition of: fire extinguisher, warning reflectors and first aid kit		
11	Check: all doors, glass and windows: for operation, cleanliness, and damage.		
12	Check: all emergency exits for operation, warning devices, markings, to be free and clear		
13	Check interior lighting: for operation and damage		
14	Check Side Passenger Entry Door - Emergency Exit Operation (see page 11,12,13)		

Pre-Trip Inspection (suggested minimum)

Any item not passing inspection, must be reported immediately, before operating vehicle

FAILURE OF HIGHLIGHTED ITEM(S) TO PASS INSPECTION WILL CAUSE VEHICLE TO BE GROUNDED

Item	Inspection Procedure	Pass	Fail
15	Check Side Passenger Entry Door: for damage and proper closing operation		
16	Check exterior lighting: for operation and damage		
17	Check exterior: for cleanliness, markings and damage		
18	Check fuel cap: in place and secure		
19	Check all tires and wheels: for tread depth, cracks & bulges, missing lug nuts, and air pressure 100 psi Frt/Rr for KK35, and 120 psi Frt & 100 psi Rr for KK38		
20	Check: oil level		
21	Check: transmission fluid level		
22	Check: engine coolant level		
23	Check: power steering fluid level		
24	Check: brake fluid level		
25	Check: belts for tension and wear		
26	Check operation of: cameras, if applicable		
27	Check operation of: PA system, if applicable		
28	Check operation of: audio and video system, if applicable		
29	Check wheelchair lift: for proper function or damage and securement station equipment		

GENERAL VEHICLE SAFETY WARNINGS

CAUTION - VERY IMPORTANT

NO STANDEES ARE ALLOWED.

AT ANY TIME WHILE THE VEHICLE IS IN MOTION.

DISCONTINUE OPERATION OF THE VEHICLE, WHEN THE LOW AIR WARNING LIGHT OR BUZZER ON INSTRUMENT CLUSTER ACTIVATE, OR UNTIL THE PROBLEM WITH THE SYSTEM CAN BE RESOLVED.

DISCONTINUE OPERATION OF THE VEHICLE, IF ANY CRITICAL ITEM ON THE PRE-TRIP INSPECTION LIST FAILS TO PASS, OR UNTIL ALL PROBLEMS ARE RESOLVED.

AIR DOOR EMERGENCY RELEASE VALVE, MUST BE OPERATED DAILY, PRIOR TO VEHICLE OPERATION **Caution!** UNDER EMERGENCY SITUATIONS, (IF EQUIPPED) THE BOTTOM AIR STEP WILL NOT DEPLOY.

Vapor Air & Electric Door Operational Safety Check List

ATTENTION

WHEN OPERATING A VEHICLE WITH A VAPOR DOUBLE PANEL AIR OR ELECTRIC ACTUATED PASSENGER ENTRANCE DOORS, THE FOLLOWING PRECAUTIONS SHOULD BE TAKEN.

AIR DOORS - SINGLE or DOUBLE

The Emergency Release Valve System - *(must be checked on a daily basis)*

Once the emergency release valve has been actuated (by turning the red handle counter clockwise), it should be possible to open the doors by pushing outward with your hand after about 5 seconds.

Caution! UNDER EMERGENCY SITUATIONS, (IF EQUIPPED) THE BOTTOM AIR STEP WILL NOT DEPLOY.

The Obstruction Sensing System (Sensitive Edge) - *(must be checked on a daily basis)*

Only when the door is closing, can reversing be actuated. The reversing motion should be shut off at about 10 to 30 mm before the final closing position. If the reversing process actuates too late, the sensi-

ELECTRIC DOORS

The Emergency Release Lever System - *(must be checked on a daily basis)*

Once the emergency release lever has been actuated (by pushing the red handle from right to left as indicated on the sticker), it should then be possible to open the doors by pushing the panels outward with your hand.

Air Door Emergency Release Valve



EMERGENCY USE ONLY



CAUTION!
UNDER
EMERGENCY
SITUATIONS,
(IF EQUIPPED) THE
BOTTOM AIR STEP
WILL NOT DEPLOY.

ACTION:

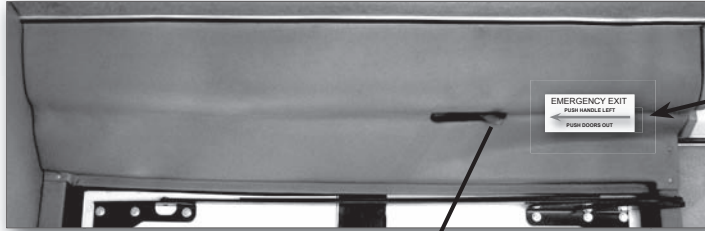
VALVE MUST BE OPERATED DAILY,
PRIOR TO VEHICLE OPERATION

EMERGENCY OPERATION

For Emergency Door Opening, turn the red valve counter clockwise, this will release the door after about 5 seconds, then the door can be pushed open.

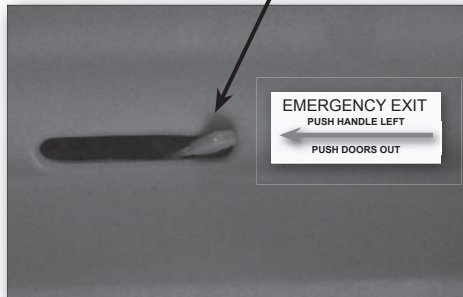
Electric Door Emergency Release Lever

Electric Door Motor Cover



EMERGENCY EXIT
PUSH HANDLE LEFT
←
PUSH DOORS OUT

Emergency Exit Lever Decal



Emergency Exit Lever

ACTION:
LEVER MUST BE CHECKED DAILY,
PRIOR TO VEHICLE OPERATION

EMERGENCY USE ONLY

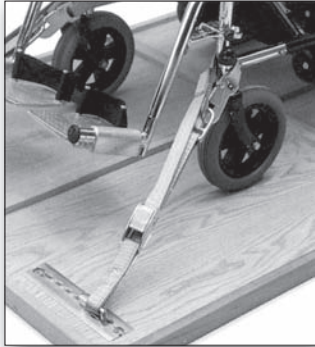
Wheelchair Securement and Occupant Restraint Systems

Pre-Trip Inspection

- ☐ Is each securement station properly equipped with four securement straps, a lap belt, and a shoulder belt?
- ☐ Are all straps and belts in good working condition? Any defects such as cut, frayed, contaminated or damaged webbing, improperly functioning buckles or hardware, or broken or worn parts, require replacement of the entire strap or belt assembly.
- ☐ Are all floor anchorages, (i.e., tracks or plates), clear of dirt or debris to allow for proper system fitting attachment?
- ☐ Is there a clean, dry container in the vehicle to allow for storage of the system when not in use?
- ☐ Is the vehicle equipped with a web belt cutter for use in the event of an emergency evacuation?
- ☐ Are complete system operational instructions, in either printed or decal form, located within the vehicle compartment to serve as a reference?

CAUTION! Never utilize the Occupant Restraint System unless you are fully trained, if you're not sure what to do, always call your Kinedyne Representative for Assistance!

Typical Wheelchair Securement Methods

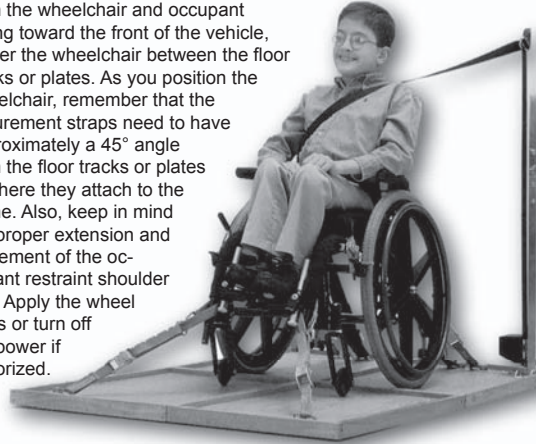


Front Strap Attachment

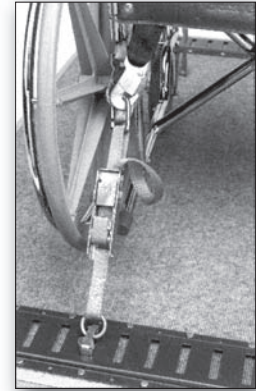


Lap Belt Attachment

With the wheelchair and occupant facing toward the front of the vehicle, center the wheelchair between the floor tracks or plates. As you position the wheelchair, remember that the securement straps need to have approximately a 45° angle from the floor tracks or plates to where they attach to the frame. Also, keep in mind the proper extension and placement of the occupant restraint shoulder belt. Apply the wheel locks or turn off the power if motorized.



Typical 4-Point Restraint with Lap & Shoulder Belt



Rear Strap Attachment

For Specific Operating Instructions and System Care and Maintenance, refer to your Kinedyne Literature

Air Door Lock Pin Assembly



SECURITY PIN ONLY
REMOVE DURING
BUS OPERATION

CAUTION!
UNDER EMERGENCY
SITUATIONS. (IF EQUIPPED)
THE BOTTOM AIR STEP WILL
NOT DEPLOY.

CAUTION!
Security Pin must be removed
during bus operation.
Pin is only to be used for security,
if bus is not in operation.

Dual Overhead Parcel Racks



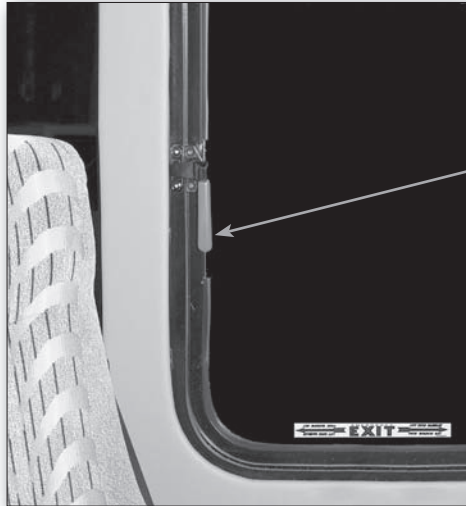
Overhead Parcel Rack for models 31 & 35 only
(curb side shown)



Overhead Parcel Rack for models 35 & 38 only
with Roof Top Ducted A/C
(street side shown)

CAUTION! Do not overload Parcel Racks. Do not fasten parcels to retainer bars.

Emergency Egress Window Operation



GL20 Touring Window



Lift up
on lever
to
disengage
latch



Pull down
on lever
to
disengage
latch



Panoramic Frameless Window



Windows with Emergency Exit stickers are designated emergency exits. Follow the directions on the sticker.

Disengage latches and push windows out



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Emergency Roof Hatch Exit



SEE MANUFACTURERS LITERATURE
FOR ADDITIONAL INFORMATION

This is a Dual Purpose hatch used for Emergency Egress and Ventilation purposes.

SUGGESTED MAINTENANCE

Periodically inspect attaching fasteners for evidence of loosening due to tampering, and regularly clean surface with a mild soap and water.

CAUTION: When removing graffiti, it is the customers responsibility to ensure cleaning solutions are compatible with the materials used on Safety Vents. Solutions containing, acetone, ether, lacquer thinner, or other solvents can destroy the high strength properties of many engineering plastics - AVOID these cleaners

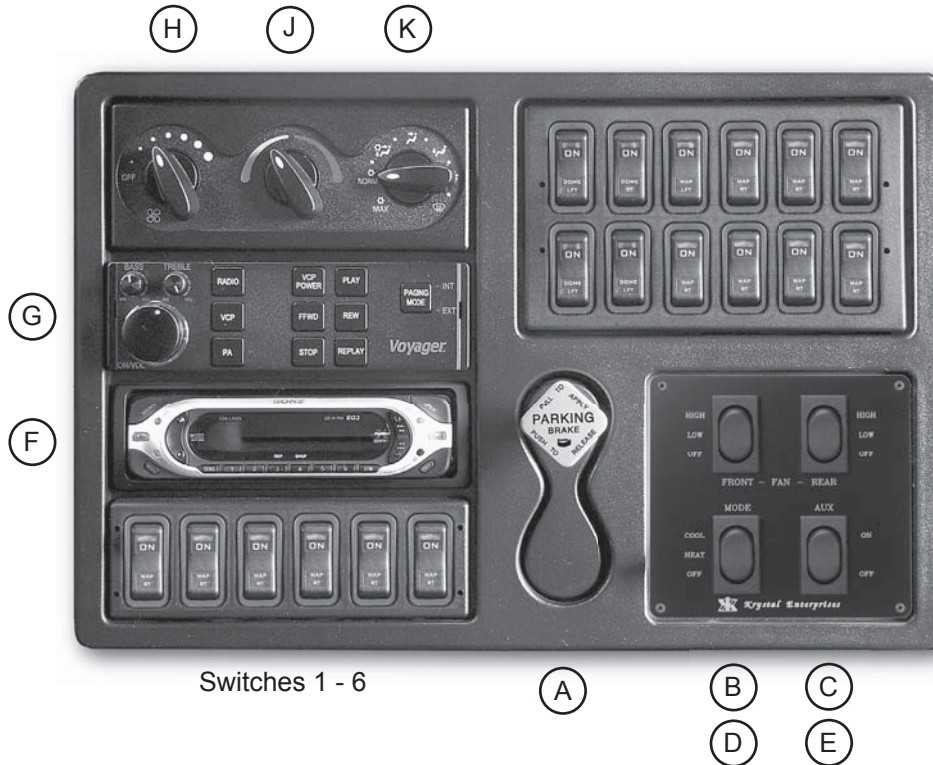


For Emergency Exit
Turn Red Handle Clockwise,
Then Push Knob to Open

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In Dash Control Panel



Switches 7 - 12

Switches 13 - 18

Component Legend

A	Air Park Brake **
B	Front Fan Switch Hi-Low-Off
C	Rear Fan Switch Hi-Low-Off
D	Climate Control Cool-Heat-Off
E	Auxiliary
F	AM/FM - CD
G	Audio/Video PA
H	Fan Control Speed
J	Temp Control
K	Front A/C Control

** Air Brake is Standard with LCT Transmission and Optional with WTEC Transmission

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In Dash Control Panel Switches and Components



Carrier Sutrak Controls
for Roof Mounted A/C

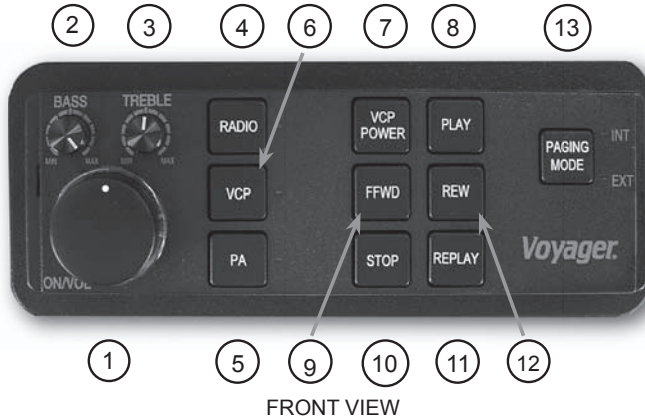
Component Legend (cont)

L	Fan Switch - Carrier Sutrak
M	Temp Control - Carrier Sutrak
N	12 Volt Access
O	
P	
Q	
R	

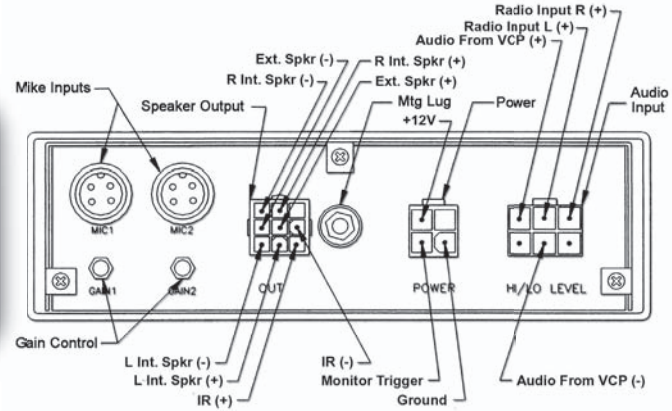
Dash Panel Switch Legend

1	Air Suspension Dump - DUMP/SUSP
2	Heated Mirror - ON/OFF
3	BLANK
4	BLANK
5	Luggage Door Ajar Warning Light
6	Passenger Door Ajar Warning Light
7	Cabin Light - ON/OFF
8	Map Light - ON/OFF
9	Bath Pump - ON/OFF
10	Floor Heater - ON/OFF
11	Floor Heater - HI/LO
12	Load Shed - ON/OFF
13	BLANK
14	BLANK
15	BLANK
16	BLANK
17	BLANK
18	BLANK

Audio/Video PA Control



FRONT VIEW



REAR VIEW

1 On/Off Volume Control - controls power and volume	8 VCP Play - starts the tape playing
2 Bass Control - increases or decreases bass	9 VCP Fast Forward - fast forwards tape
3 Treble Control - increases or decreases treble	10 VCP Stop - stops tape
4 Radio Mode - enables radio, indicator light will be on	11 VCP Replay - rewinds and replays from start of tape
5 PA Mode - enables PA, indicator light will be on	12 VCP Rewind - rewinds tape
6 VCP Mode - enables VCP, indicator light will be on	13 Paging Mode - (Internal or External) press button once to engage system, press again to toggle between internal/external
7 VCP Power	

SEE MANUFACTURERS LITERATURE FOR ADDITIONAL INFORMATION

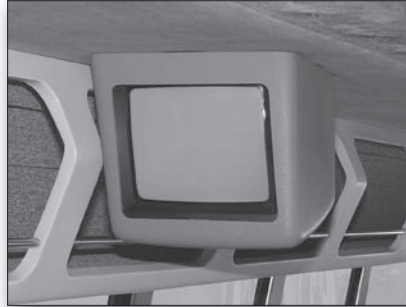
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Video Entertainment Center



Bulkhead Mounted LCD Monitor



Ceiling Mounted CRT Monitor

Basic Operating Instruction LCD Monitor

[The TV cannot be viewed without first
truning on the DVD]

For specific Operating Instructions, Check
Your Component information.Manual

1. After truning on the DVD, turn on the TV using the power on the TV or the button on the TV remote.
(Note: TV must be set to Video #1 for DVD to work)
2. To view TV, push the TV/Video button to switch between TV and DVD(Video).
3. To view movies select DVD, from the on screen menu.
4. The DVD buttons on the remote will now operate all the functions of the DVD.



Under Loft LCD Monitor

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Dash Mounted DVD Player



Components shown here may vary from what you have installed in your vehicle.

See manufacturers literature for operating instructions on your specific component

To view the TV, the DVD Player must be turned on.
Next set the DVD to TV by using the remote control.

Load Shed & High Idle Charge Protection Operating Procedures

Load Shed System Reference Guide

The Load Shed portion of your vehicles Charge Protection System, is engaged by pressing the switch marked "Load Shed" on the dash. Once engaged, this system monitors system voltage and automatically shuts down vehicle functions as necessary, to maintain the proper specified voltage levels. This system is automatic and not adjustable. It is recommended that the Load Shed system be enabled at all times. **NOTE:** The light on this switch **will only be illuminated** if the system is actively monitoring and turning off systems to conserve voltage. See your INTERNATIONAL manual for specific details.

Manual High Idle System Reference Guide

SPSC (Stationary Pre-Set Speed Controls)

THIS SYSTEM OFFERS PRE-PROGRAMED SETTINGS FOR MANUAL HIGH IDLE CHARGE PROTECTION

Note: This means, if all vehicle enabling conditions are met, Manual High Idle Charge Protection mode can be engage.

ENABLING CONDITIONS:

- Parking brake set
- Gear shift lever in PARK
- Foot off service brake
- Foot off accelerator
- Brake lights connected and functional

TO ACTIVATE HIGH IDLE CHARGE PROTECTION

Do the following:

- Press the "ON" position on the left side CRUISE/THROTTLE - ON/OFF switch.

● This feature provides two different predetermined speeds which are selected with the SET/CRUISE or RESUME/ACCEL positions. You need to know which position to use for your specific need.

Press the right side SET/CRUISE or RESUME/ACCEL switch for the desired pre-set speed

- Press the switch that selects the desired speed.
- To select the other speed, press the other switch. The engine will immediately return to idle.
- You must press the switch a second time to go to the second speed. This is done to protect equipment from being inadvertently operated at the wrong speed.

TO DEACTIVATE HIGH IDLE CHARGE PROTECTION,

Do the following:

- Press the "OFF" position on the left side CRUISE/THROTTLE - ON/OFF switch.

High Idle Charge Protection Operating Controls

See Section D of your INTERNATIONAL Operators Manual for specific information on the basic functions of your engine speed control system.

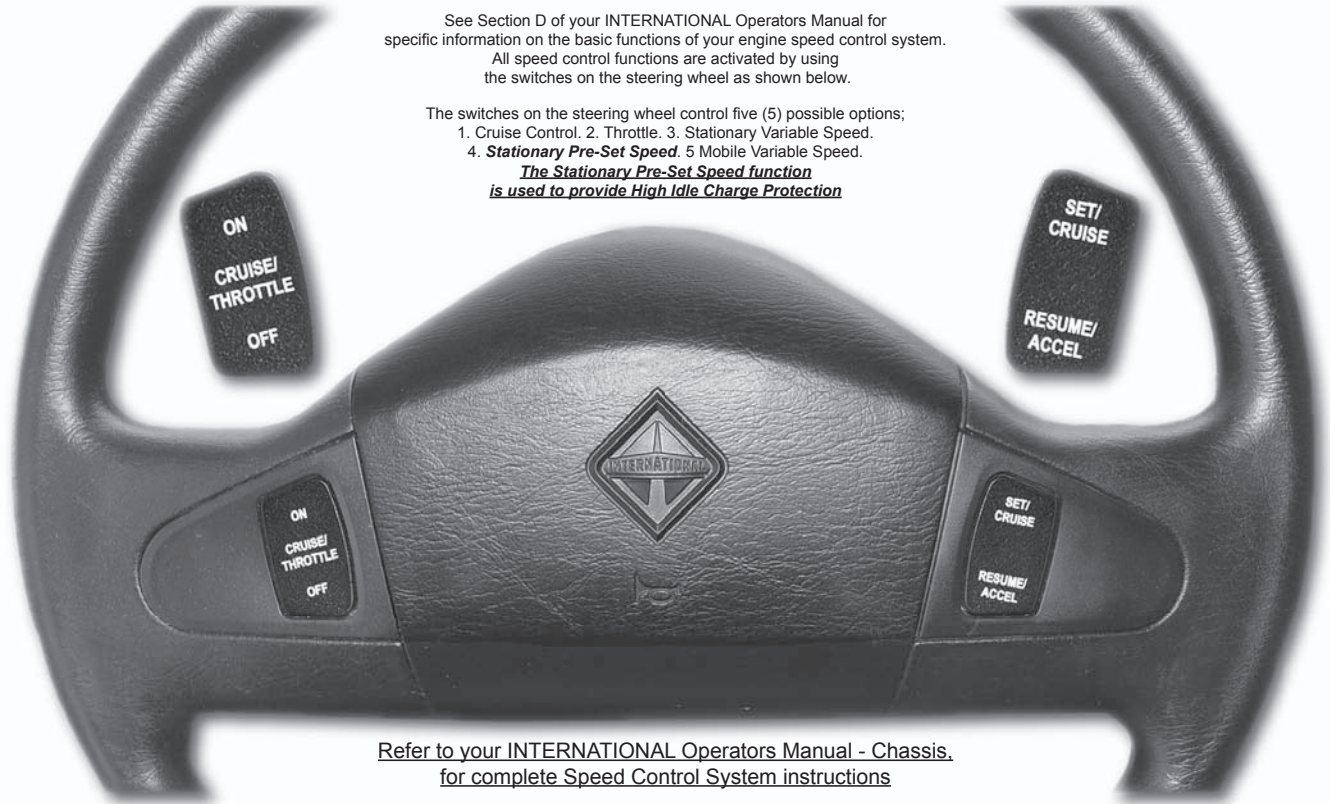
All speed control functions are activated by using the switches on the steering wheel as shown below.

The switches on the steering wheel control five (5) possible options;

1. Cruise Control. 2. Throttle. 3. Stationary Variable Speed.

4. **Stationary Pre-Set Speed.** 5 Mobile Variable Speed.

The Stationary Pre-Set Speed function
is used to provide High Idle Charge Protection

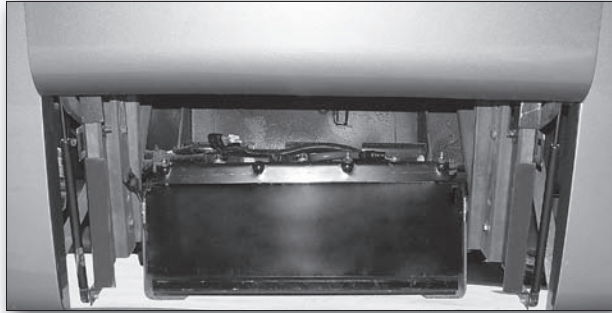


Refer to your INTERNATIONAL Operators Manual - Chassis.
for complete Speed Control System instructions

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Battery Compartment and Under Vehicle Storage



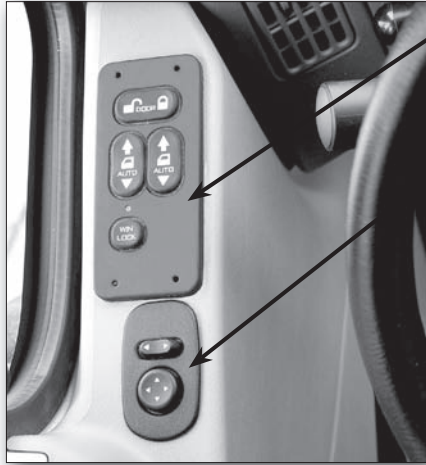
Battery Compartment Access

This tray contains three (3) in-line INTERNATIONAL batteries
See your INTERNATIONAL manual for specific details and specifications.



Under Vehicle Storage Bin
Standard on model 38
Optional on model 31 & 35

Window, Door, Mirror and Light Control Switches



Door Lock and Window Control Switch

If equipped, these switches allow the driver to lock/unlock doors and windows, and raise and lower windows. The passenger side may also be comparably equipped.

Mirror Control Switch

This rocker switch allows the operator to switch from right to left mirror. When either the right or left mirror is engaged, pressing the 4 arrow control, allows the mirror to move in 4 different directions for precise adjustment.

CAUTION!

Leaving the heated mirror switch on in hot weather may cause the mirror to crack.



Door Switch

This switch opens and closes the passenger door.

Panel Dimmer Switch

This momentary rocker switch controls and adjusts the dash cluster lights up and down eight levels of brightness.

Park Light Switch

This three position switch activates dash lights and exterior running lights and headlights.

These 3 switches are located to the left of the steering wheel, below the dash cluster

Back-Up Camera Controls and Operation



LCD Monitor

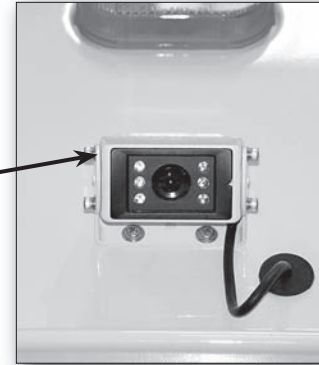
Location of the monitor may vary according to vehicle configuration

Monitor Controls

1. **Power Button**, glows dimly when system is connected fully manual, becoming bright upon activation
2. **A/B input Select Button**, toggles active display between AV1 and AV2 inputs
3. **Day/Night Mode Button**, toggles intensity of LCD screen for day or night operation, (day=maximum intensity, night=less intensity)
4. **Picture Adjustment Menu Button**, accesses on-screen-display, to adjust (brightness, contrast, color, tint). Use the Volume control to adjust each up or down, as indicate by a bar graph at bottom on screen.
5. **Volume Button**, controls +/- output volume of built-in speaker, when feature is connected. Also used in Picture Adjustment Mode.

NOTE:

To reverse image on monitor, push button on back of camera



Back-Up Camera

(located on rear of vehicle)

System Operation

This system consists of two major components:

1. The Back-Up Camera
2. LCD Monitor

The system may be connected two ways:

1. **Fully manual**, requiring the power button on the LCD Monitor to be pushed to energize the system and activate the monitor.
2. **Automatic**, which activates the monitor whenever the ignition is turned to accessory or the engine is started.

SEE MANUFACTURERS LITERATURE
FOR ADDITIONAL INFORMATION

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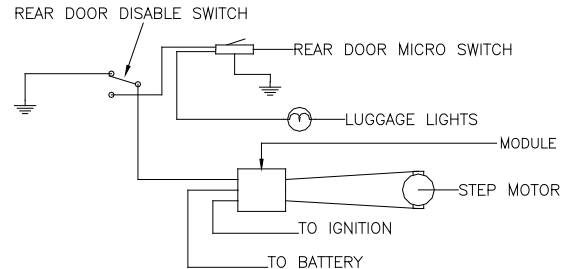
Rear Step Operation



Rear Step Switch Guard

SEE MANUFACTURERS LITERATURE
FOR ADDITIONAL INFORMATION

Rear Step
Operational Schematic



For the double rear step (shown above) and the single rear step, operation is the same. The schematic (this page) explains the electrical operation of both steps. The **power switch** allows you to enable or disable step operation. When the step is enabled, opening the rear door automatically extends the step.
Note: See Manufacturers literature regarding periodic lubrication requirements.

Rear Cargo Door Micro Switch



Rear Door and Hinge Assy

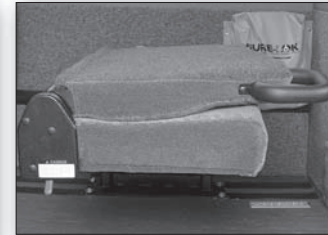
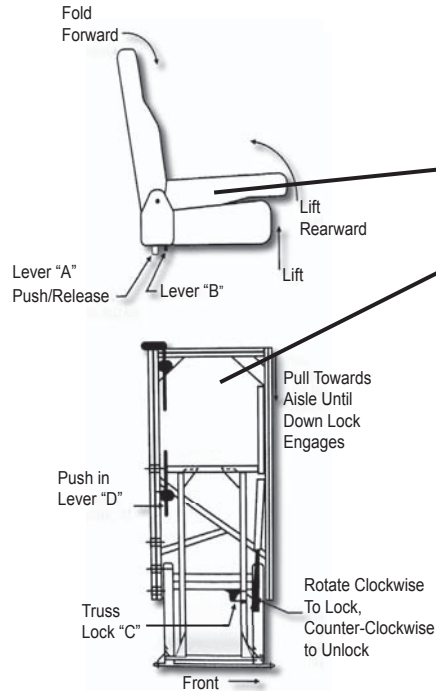


Cargo Door Micro Switch

The switch is located at the rear cargo door upper hinge, shown at left and above. It operates the rear interior lights and also activates the door-ajar light on the front overhead control panel.

This switch works in conjunction with the rear step, allowing the power switch (shown on previous page) to enable or disable step operation.

Foldaway Seating



To Lower

1. Rotate the Truss Lock "C" to unlock the assembly, then push Lever "D" and pull the top of the seat toward the aisle until it is locked in the down position.
2. Push lever "A" forward, and lift the back cushion until the lever "A" has snapped back into the locked position.

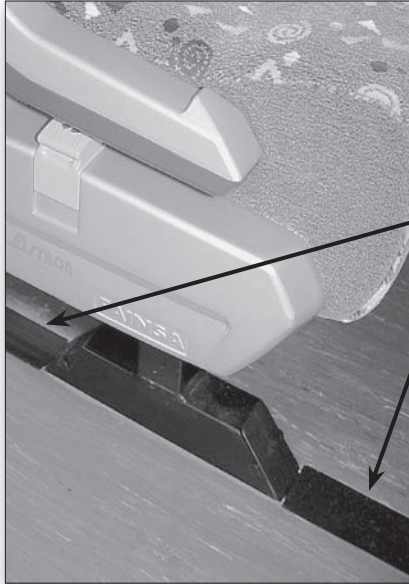
To Raise

1. Push lever "A" forward, and fold the back cushion down against the seat cushion until lever has snapped back into locked position.
2. Push lever "B" upward, and lift the seat into the fold away position, and rotate the Truss Lock "C" to lock the assembly in place.

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Bus Passenger Seating



AMAYA seating installation, 38' model only

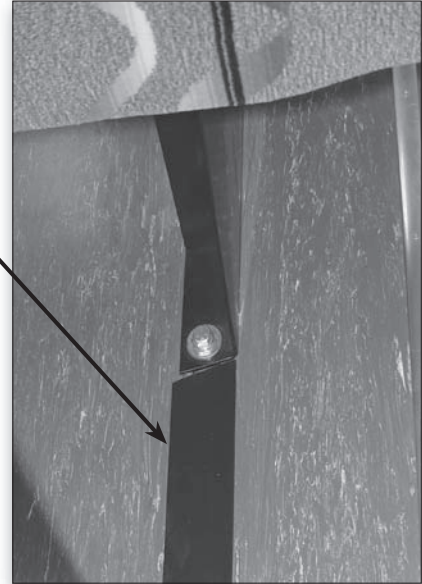
Bus seating is mounted into the floor of the vehicle as shown in the photos to the left and right

To move seating:

1. Remove the black plastic track cover, so the track is exposed.
2. Next remove the nut from the base.

NOTE: Nut must be horizontal with the track when the seat is re-attached to the seat track.

CAUTION: Bolts must be torqued to 35 ft... Lbs.



Standard seating installation,
31' & 35' models only

Caution: When Adding Seating, Do Not Exceed Weight Distribution/Payload Limitations

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Optional Stainless Steel Wheel Liners

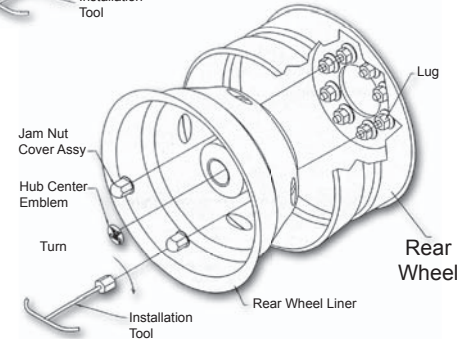
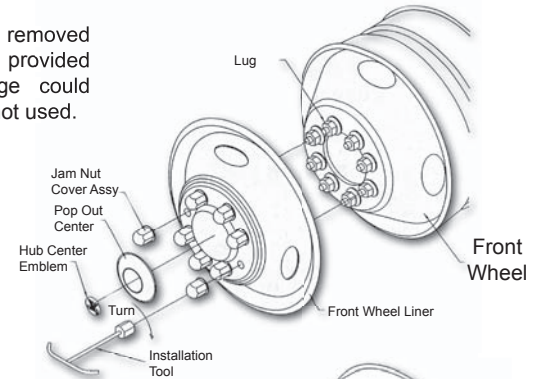


CAUTION!

Wheel liners should only be removed using the Wheel Liner Tool provided with your vehicle. Damage could occur if the supplied tool is not used.



Wheel Liner Tool



INSTALLATION - REMOVAL INSTRUCTIONS

NOTE: When removing or installing, never remove the original equipment lug nuts.

1. **TO REMOVE**, simply place the Wheel Liner Tool over the Jam Nut Covers.
2. Remove Jam Nut Covers from each wheel and remove Liners
1. **TO INSTALL**, determine the correct placement of liners for proper hand hole alignment.
2. Install Liner over studs, then install Jam Nut Covers w/built-in jam nuts onto the studs. Using the Wheel Liner Tool, tighten all Jam Nuts

SEE MANUFACTURERS LITERATURE FOR ADDITIONAL INFORMATION

Krystal Enterprises

RETURN TO MENU

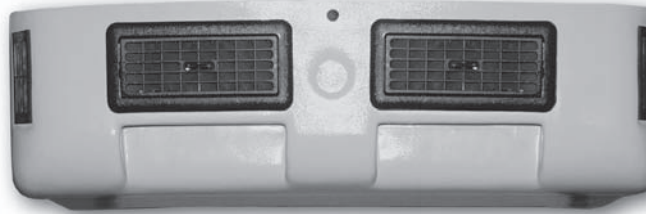
Air Conditioning Assemblies for Models 31 & 35 ONLY



ACC Front Air Conditioning

This unit also provides heat when A/C is not required, by toggling switch on the dash panel

Both units are operated by the driver, using the controls on the Dash Panel, see page 20 & 21.



Optional ACC Rear Air Conditioning

A/C only - No Heat

MODEL BY BTU'S	FREON CHARGE
68,000 BTU Front with 40,000 BTU Rear using (Single Aux Compressor)	11.75 lbs.
Model 38 Roof Top Carrier A/C (Single Aux Compressor)	11.75 lbs
68,000 BTU (Dual Aux Compressors)	5.50 lbs
40,000 BTU (Dual Aux Compressors)	6.0 lbs
Model 38 Roof Top Carrier A/C (Dual Aux Compressors)	7.0 lbs. per compressor

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Air Conditioning System - Roof Mounted for Model 35 & 38 Only



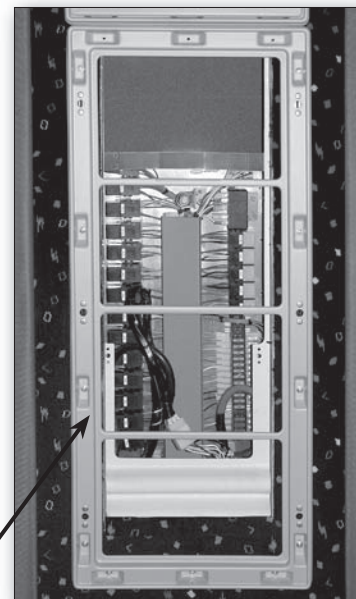
Intake grille for roof mounted A/C



Removing intake grille for access to filter and electrical panel .

Intake grille fasteners are twist out to dis-engage and push in to engage.

Intake Filter should be cleaned often to insure proper filtration. Fuses and relays for the A/C system are located for easy access as shown on the right.



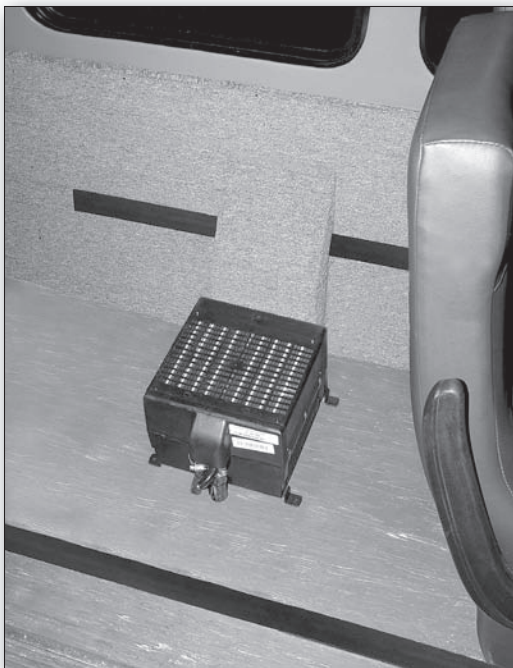
Roof mounted A/C electrical panel located behind forward intake grille

For schematics of wiring diagrams and fuse locations see pages 96-101

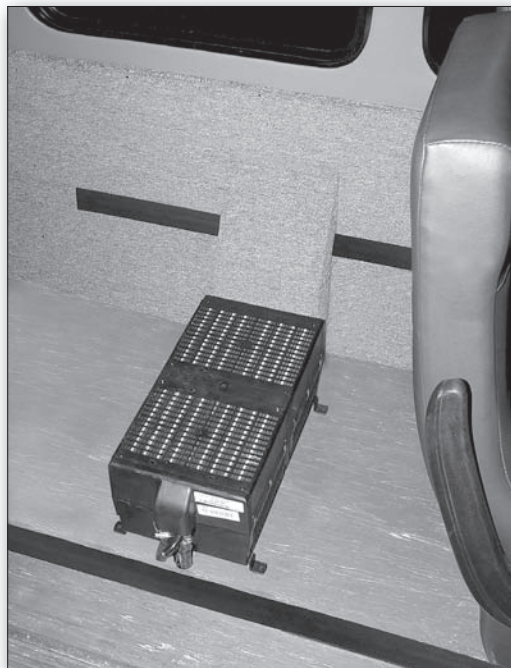
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Floor Heater Assembly - Optional Rear



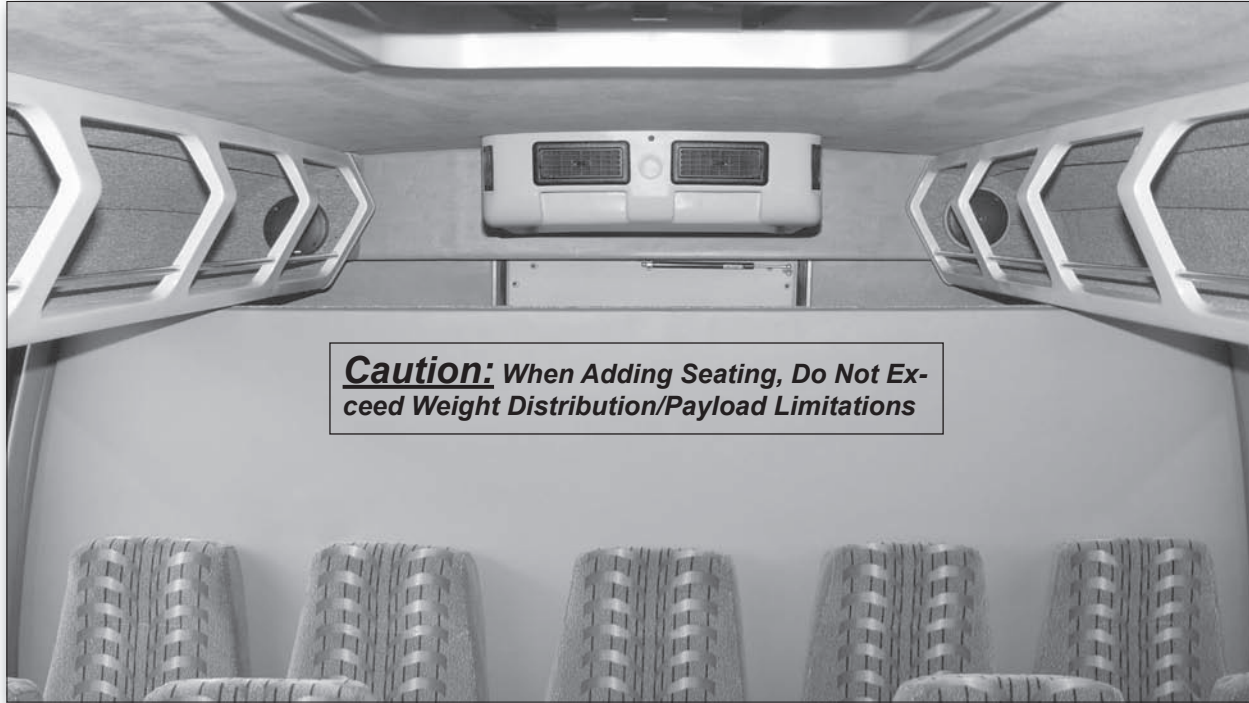
30,000 BTU Model



65,000 BTU Model

Both units are turned on when the heat mode is selected on the In Dash Control Panel (see page 20)

Movable Wall, Standard - Front View (models 31 & 35 only)



Movable Wall shown above in the forward position

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Movable Wall, Standard - Rear View (models 31 & 35 only)

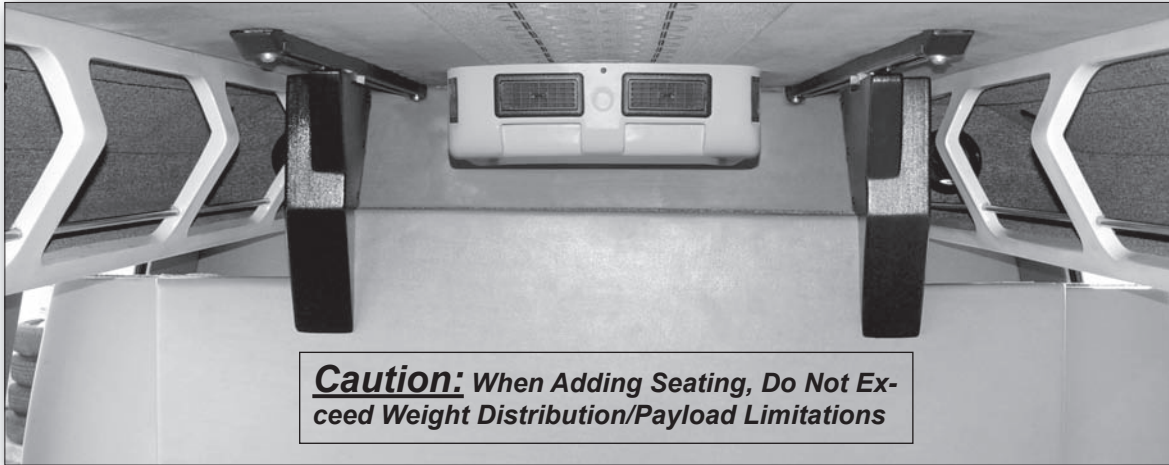


The standard movable wall can be moved by doing the following:

1. Remove the seats from in front of the wall
2. From the baggage compartment side, remove the plastic track cover on both the side wall and floor to expose the track.
3. Disengage the top latches at the outside corners of the wall.
4. From the front side of the wall, loosen the bolts.
5. With assistance on both sides of the wall, push evenly on both sides and slowly move the wall to the desired position.
6. When securing wall, make sure to re torque all bolts to 35 ft.. lbs. Note: if seats are installed, seat bolts must also be torqued to 35 ft.. lbs.
7. Replace all plastic track covers and engage top latches.

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Movable Wall (E-Z Move) - Open Front



E-Z Move Wall Operating Instructions

Movable Wall to the open position (with luggage compartment)

- 1) Release the top two clamps located on the ceiling.
- 2) Enter bus through the rear door and release bottom clamp
- 3) Push the movable wall at the upper most centrally located handle to the stop
- 4) Release the divider clamp and slide out each divider half. Rotate the clamp assembly into the seat track and engage clamps. **SAFETY ALERT**
- 5) Engage the top two clamps into the locked position **SAFETY ALERT**

SAFETY ALERT

Clamps must be locked down before operating vehicle

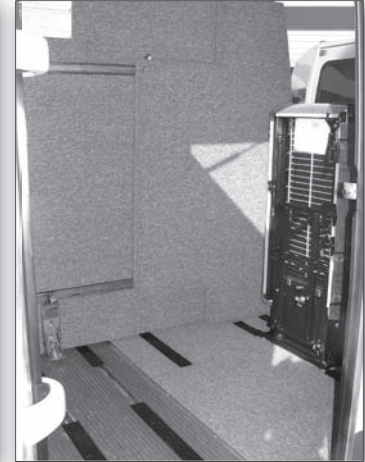
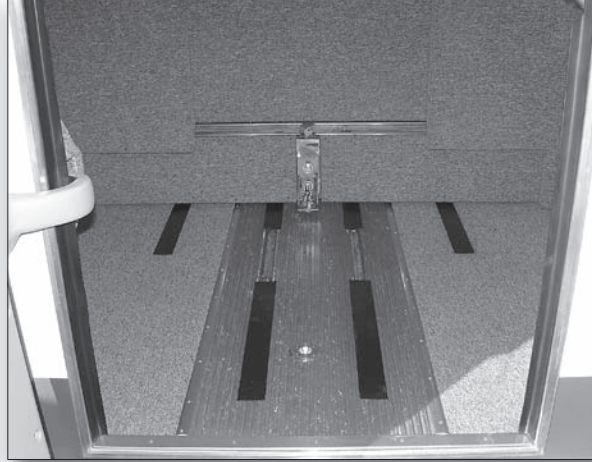
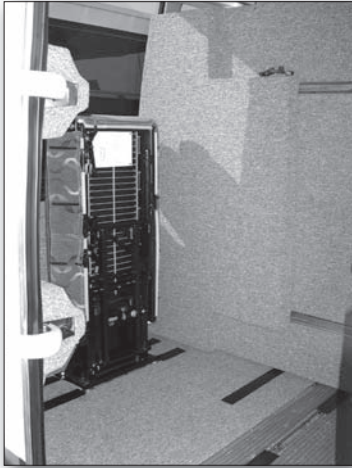
Movable Wall to the closed position (no luggage compartment)

- 1) Release the top two clamps located on the ceiling.
- 2) Enter bus through the rear door.
- 3) Release and rotate the clamp assembly (divider) out of the seat track. Slide the divider to the stop and engage the divider clamp to lock down the dividers.
- 4) Pull the movable wall at the upper most centrally located handle to the stop.
- 5) Engage the bottom clamp into the receiver located in the floor. **SAFETY ALERT**
- 6) Close the rear door. Enter the bus, walk to the rear and engage the top two clamps into the locked position. **SAFETY ALERT**

SAFETY ALERT

Clamps must be locked down before operating vehicle.

Movable Wall (E-Z Move) - Open Rear



To Open and Close E-Z Move Wall

Instructions for Opening and Closing the E-Z Move Wall shown on the previous page, may also be found mounted on the back of the Movable Wall. Follow the instructions for Open Position - (with luggage compartment) or Close Position - (no luggage compartment)

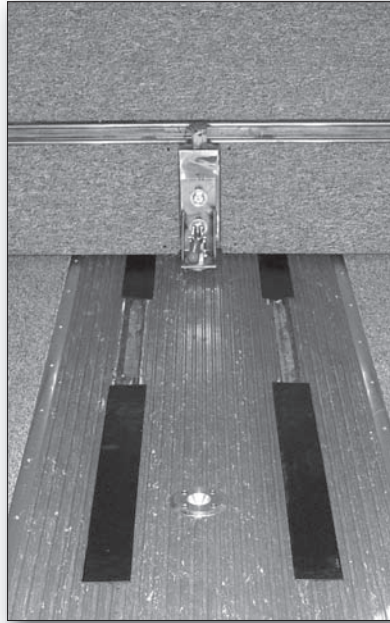
SAFETY ALERT: ALL CLAMPS MUST BE LOCKED DOWN BEFORE OPERATING VEHICLE

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Movable Wall (E-Z Move) - Clamp Assemblies



LH & RH Lower Clamp Assembly
(LH shown)



Center Lower Clamp Assembly



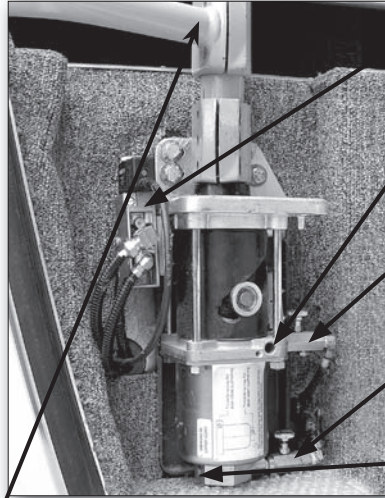
LH & RH Ceiling Clamp Assembly
(RH shown)

SAFETY ALERT: ALL CLAMPS MUST BE LOCKED DOWN BEFORE OPERATING VEHICLE

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Single Plug Door - Air Operated



4-Way Valve

Closing Cushioning Valve

Closing Speed Valve

Opening Speed Valve

Opening Cushioning Valve



Single Plug Door System
(door shown partially open)



Secondary Entry Door Switch - used on air operated door systems, located on passenger door post

CAUTION! Never attempt adjustment of the Boomerang Arm, call KRYSTAL SERVICE

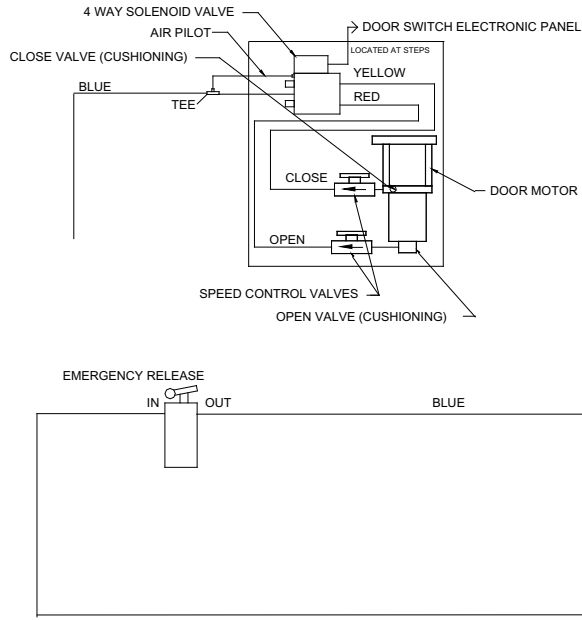
Air Door Speed Adjustment Procedure

1. Remove the air motor cover located in the stepwell.
2. Using the photo on this page, identify the speed control valves. Using a 3/8" wrench, loosen the locknuts on both valves.
3. Operate the door and adjust both valves until the opening and closing speeds are equal and acceptable. Then tighten both locknuts.
4. Using a flat blade screwdriver, adjust the opening and closing cushioning valves on the air motor, then replace cover.

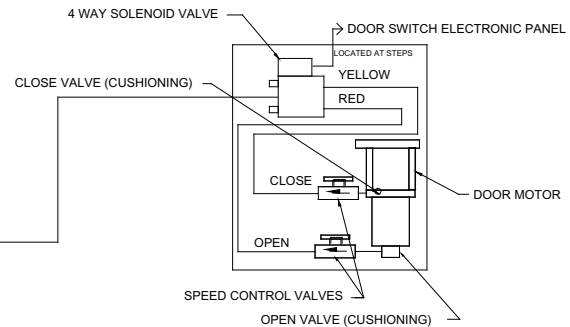
Krystal Enterprises

Compressed Air Schematic - Single Plug Door

DETAIL FOR 2005 & NEWER MODELS

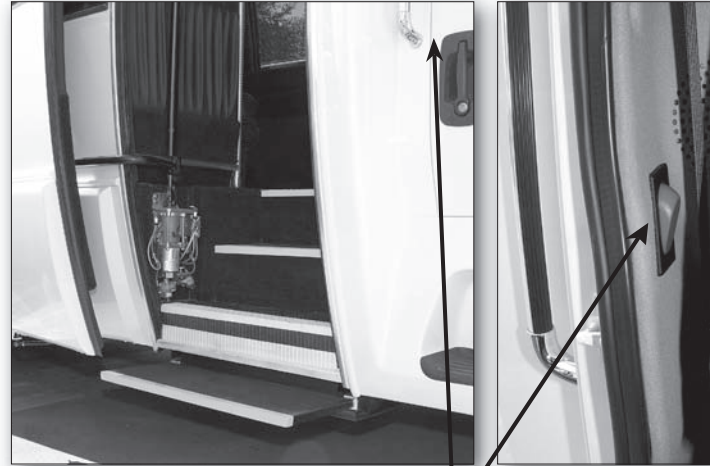
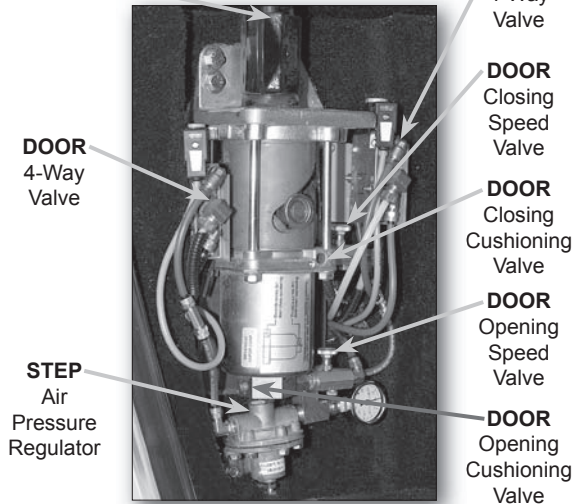


DETAIL FOR 2004 & OLDER MODELS



Single Plug Door with Air Operated Lower Step

CAUTION! Never attempt adjustment of the Boomerang Arm, call KRYSTAL SERVICE



Single Plug Door System
With Extended Lower Step

Secondary Entry Door Switch - used on air operated door systems, located on passenger door post

Note! Emergency override prevents door from opening if Lower Step Fails To Deploy

Air Door Speed Adjustment Procedure

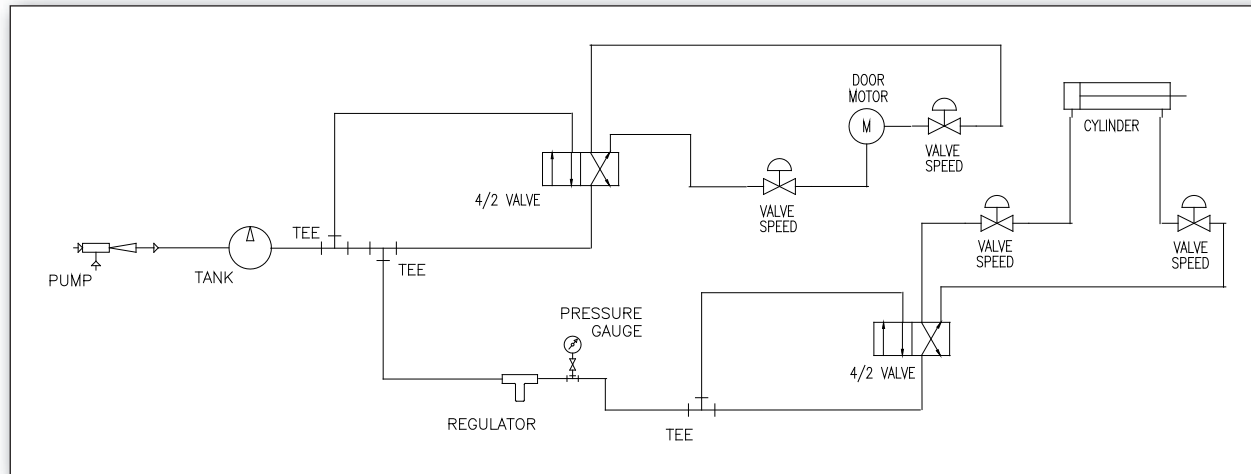
1. Remove the air motor cover located in the stepwell.
2. Using the photo on this page, identify the speed control valves. Using a 3/8" wrench, loosen the locknuts on both valves.
3. Operate the door and adjust both valves until the opening and closing speeds are equal and acceptable. Then tighten both locknuts.
4. Using a flat blade screwdriver, adjust the opening and closing cushioning valves on the air motor, then replace cover.

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Lower Step Adjustment Procedure and Door/Step Air Schematic

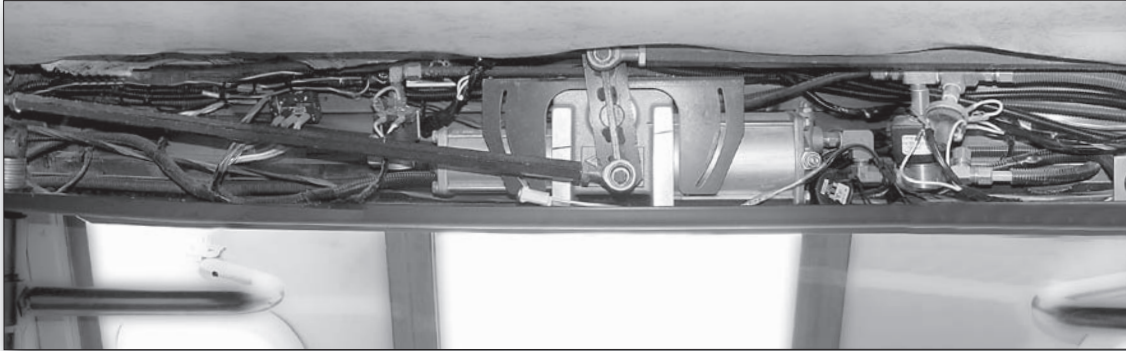
Air Operated Step Adjustment Procedure

1. Remove the air motor cover located in the stepwell, and remove air step cover from the underside of air step.
2. Locate the speed control valves on the cylinder located on the underside of the air step. Using a 3/8" wrench, loosen the locknuts on both valves.
3. Check air pressure on guage to verify operating pressure is between 60 psi minimum and 80 psi maximum.
4. Operate the door and adjust both speed control valves until the extension and retraction speeds are equal and acceptable. Then tighten both locknuts, and replace both covers.



SINGLE PLUG DOOR AND LOWER STEP AIR SCHEMATIC

Double Plug Door - Air Operated



ATTN: Double Plug Air Door Speed Is Factory Set

**If adjustments become necessary, do not attempt adjustments.
Contact the Krystal Service Dept., at 1-800-Krystal (579-7825)**

CAUTION!

The Emergency Release Valve System - (must be checked on a daily basis)

Once the emergency release valve has been actuated (by turning counter clockwise), it should be possible to open the doors by pushing outward with your hand after about 5 seconds.

Caution! *UNDER EMERGENCY SITUATIONS. (IF EQUIPPED) THE BOTTOM AIR STEP WILL NOT DEPLOY.*

The Obstruction Sensing System (Sensitive Edge) - (must be checked on a daily basis)

Only when the door is closing, can reversing be actuated. The reversing motion should be shut off about 10 to 30 mm before the final closing position. If the reversing process actuates too late, the sensitivity of the differential pressure switch would require re-adjustment. Do not attempt adjustment, **call the KRYSTAL SERVICE DEPT.**

Krystal Enterprises

Double Plug Door - Air Operated

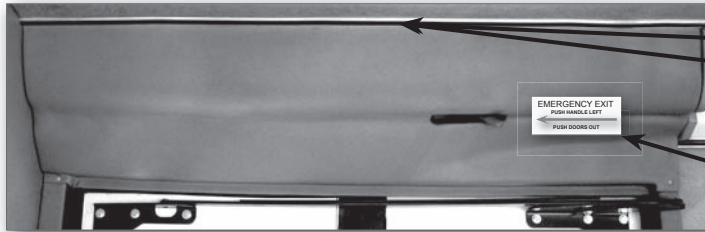


Double Plug Door System
(doors shown partially open)

Secondary Entry Door Switch, used on air operated double plug door systems, is located on the in-dash control panel as shown on page 20-21

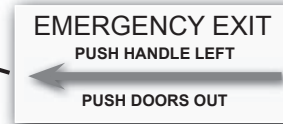
Electric Swing Door System

Electric door motor Cover



For removal of door motor cover

1. Remove black rubber strip from molding channel
2. Remove exposed screws in aluminum channel
3. Remove screws from 3 corners of cover

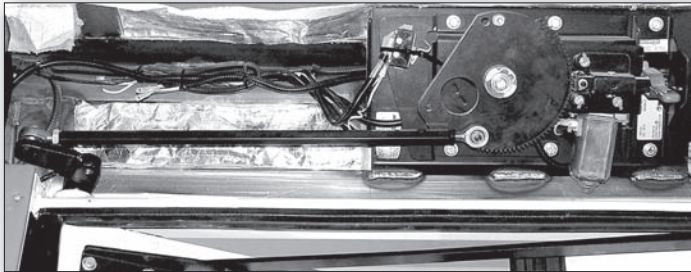


Emergency Exit Lever Decal

NOTE:

**LEVER MUST BE CHECKED DAILY,
PRIOR TO VEHICLE OPERATION**

Electric door motor with control arm



Electric Door Adjustment Procedure
Door Speed Is Factory Set

If adjustments become necessary, do not attempt adjustments. Contact the Krystal Service Dept., at 1-800-Krystal (579-7825)

Krystal Enterprises

Electric Swing Door System



Any concerns regarding door operation, such as opening or closing speed, or non-operation, should be directed to the Krystal Service Department. Never attempt any adjustments on any portion of this door assembly.

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RETURN TO MENU

Wheelchair Lift - Rear Door, BRAUN

Lift Motor Assy



Back-up Pump

Lift Control

Pump Handle

Release Valve

User Instructions

Passenger Loading and Unloading

Do not exceed the 800 pound load capacity of the lift. Prior to lift operation, the lift should be inspected for proper function. ***If any problems exist, DO NOT USE LIFT.*** Contact Braun Corp. at 1-800-THE LIFT for repair.

Passengers loading from the ground level, should back onto the platform. All passengers loading onto the platform, should be positioned fully within the yellow boundaries, facing outward from the vehicle, with the wheelchair locks locked, gripping handrails if able. Electric wheelchairs should be turned off.



UNFOLD The UNFOLD function deploys the lift from the upright position, with the platform extended flat at floor level, with the roll stop vertical.

FOLD The FOLD function raises the lift from the horizontal floor level position, bringing the platform back to a full upright position

DOWN The DOWN function lowers the platform to the ground level, and extends the roll stop to a flat position, for wheelchair egress.

UP The UP function raises the roll stop to full vertical position, before raising the platform from ground level to the floor level position for unloading.

CAUTION ! *Never raise or lower lift if roll stop is malfunctioning*

CAUTION!

YOU MUST READ AND UNDERSTAND THE MANUFACTURERS OPERATORS MANUAL BEFORE EVER OPERATING THIS LIFT

Krystal Enterprises

Wheelchair Lift - Rear Door, BRAUN



Lift Closed



Lift Extended



Lift Lowered

Emergency Back-Up Operation

In the event of an electrical system failure, this lift system provides for full manual operation. Locate the back-up pump release valve, and the hand pump handle on the motor housing.

To Unfold the Platform 1. Place the slotted end of the pump handle onto the back-up pump release valve, and

turn counterclockwise until the platform reaches floor level.

2. Turn the release valve clockwise to stop the platform (make sure valve is tight but not over tight)

To Lower Platform and Roll Stop

1. Repeat step 1 in the previous procedure to lower the lift to the ground level.

To Fold Roll Stop and Raise Platform

1. Place the slotted end of the pump handle onto the back-up pump release valve, and turn clockwise to close valve.
2. Insert handle into back-up pump, and pump until platform reaches floor level.

To Fold Platform Up

1. Repeat step 2 above until fully upright.

Note: Refer to Operator's Manual for Detailed Operating & Maintenance Procedures

Krystal Enterprises

RETURN TO MENU

Wheelchair Lift - Rear Door, RICON

Lift Motor Assy



Back-up Pump
Pump Handle
(not shown)

Lift Control
Release Valve

ATTENTION!

Lift needs service, when green light is continuously lit,

Basic User Instructions

Passenger Loading and Unloading

Do not exceed the 800 pound load capacity of the lift. Prior to lift operation, the lift should be inspected for proper function. ***If any problems exist, DO NOT USE LIFT.*** Contact Ricon Corp. at 1-818-322-2884 for repair.

Passengers loading from the ground level, should back onto the platform. All passengers loading onto the platform, should be positioned centrally on the platform, facing outward from the vehicle, with the wheelchair locks locked, and restraint belt fastened. Electric wheelchairs should be turned off.

UNFOLD The UNFOLD function deploys the lift from the upright position, with the platform extended flat at floor level, with the roll stop vertical.

FOLD The FOLD function raises the lift from the horizontal floor level position, bringing the platform back to a full upright position

DOWN The DOWN function lowers the platform to the ground level, and extends the roll stop to a flat position, for wheelchair egress.

UP The UP function raises the roll stop to full vertical position, before raising the platform from ground level to the floor level position for unloading.

CAUTION! *Never raise or lower lift if roll stop is malfunctioning*

CAUTION!

YOU MUST READ AND UNDERSTAND THE MANUFACTURERS OPERATORS MANUAL BEFORE EVER OPERATING THIS LIFT

Krystal Enterprises

Wheelchair Lift - Rear Door, RICON



Lift Closed



Lift Extended



Lift Lowered

Emergency Back-Up Operation

In the event of an electrical system failure, this lift system provides for full manual operation. Locate the back-up pump release valve, and the hand pump handle on the motor housing.

To Deploy the Platform 1. Place the slotted end of the pump handle onto the back-up pump release valve, and turn

counterclockwise $\frac{1}{4}$ turn until the platform reaches floor level.

2. Turn the release valve clockwise to stop the platform (make sure valve is tight but not over tight)

To Lower Platform and Roll Stop

1. Repeat step 1 in the previous procedure to lower the lift to ground level.

To Fold Roll Stop and Raise Platform

1. Place the slotted end of the pump handle onto the back-up pump release valve, and turn clockwise to close valve.
2. Insert handle into back-up pump, and pump until platform reaches floor level.

To Stow Platform Up

1. Repeat step 2 above until fully upright.

Note: Refer to Operator's Manual for Detailed Operating & Maintenance Procedures

Krystal Enterprises

RETURN TO MENU

Chassis Specification - Standard 3200 for Model 31 & 35

Chassis	International 3200
GVWR - Total	23,880 lbs
Front Axle Capacity	8,000 lbs
Front Springs Capacity	8,000 lbs
Rear Suspension	INTERNATIONAL AIR RIDE - 20,000 lbs
Rear Axle Capacity	17,500 lbs
Rear Axle Ratio	4.63
Shock Absorbers	Gas Filled
Engines	DT466 Turbo Diesel - 210HP
Fast Idle Controller	Standard INTERNATIONAL
Transmission	Allison 2200 PTS Series Electronic 5-Speed Automatic
Alternator	270 Amp Leece-Neville
Batteries - Chassis	3 - 12 Volt, 1950 CCA
Steering	Power Assisted
Steering Column	Locking, Energy Absorbing, Tilt w/ Cruise Control
Brakes	4 Wheel ABS Power Disc Brakes w/Air Actuated Parking Brake
Fuel Tank	65 Gallon

Chassis Specification - Standard 3200 for Model 31 & 35

Cab Paint	9219 White
Glass	Tinted All Windows
Doors	Power Door Locks - Power Windows
Lights	Halogen Sealed Beam Headlights
Air Conditioner	Cab 23,000 BTU INTERNATIONAL with R-134a
Heater/Defroster	4-Speed Fan
Safety	3-Point Shoulder/ Lap Belts
Air Bags	Driver Safety Restraint System
Windshield Wipers	Intermittent
Gauges/Instrumentation	Voltmeter, Oil Pressure, Temperature, Fuel Gauge, Speedometer, Tachometer, Air Pressure Gauges
Mirrors	Power Remote with Heated Element
Tires	245/70R19.5F 12Ply All-Season Radial
Wheels	19.5" x 7.5", 8 - Hole, Stamped Steel
Wheelbase	31= 218" 35= 254"

Standard Equipment on 3200 Model 31 & 35

- DT466 Turbo Diesel Engine 210HP
- Power Steering
- 4-Wheel ABS Power Disc Brakes
- Heavy Duty Dual Batteries
- Allison 5-Speed Auto Transmission
- International Air Ride Rear Suspension
- 245/70R19.5F All Season Radial Tires
- 50 States Emissions
- 65 Gallon Fuel Tank
- Adjustable Tilt Steering Wheel
- Cruise Control
- Engine Oil Cooler
- Transmission Oil Cooler
- Automatic High Idle Controller
- Drive Shaft Guards
- .063 Aluminum Exterior Side Walls
- Welded Steel Cage Frame
- Cab Running Boards
- Air Ride Drivers Seat
- Captains Chairs - Co-Pilot
- 3/4" Resin Laminated Floor
- 2" Fiberglass Insulation
- Commercial Grade Carpet
- Ribbed Rubber Center Aisle
- Mid-High Seats with Level 3 Fabric
- 68,000 BTU A/C System w/Dual Compressors
- AM/FM Stereo Cassette - In Dash
- Power Cab Door Locks
- Power Cab Windows
- Back-up Alarm
- Valance Lighting
- Single Plug Air Actuated Sedan Entry Door
- Full Body Undercoating
- Base White Body Color
- Power Remote/Heated Mirrors
- GL20 80% Tinted Windows w/UV Protection
- 270 Amp Leece-Neville Alternator
- Movable Luggage Partition
- Rear Luggage Door w/Electric Step

Chassis Specification - Standard 3200 for Model 38

GVWR - Total	27,500 lbs
Front Axle Capacity	10,000 lbs
Front Springs Capacity	10,000 lbs
Rear Suspension	INTERNATIONAL AIR RIDE - 20,000 lbs
Rear Axle Capacity	17,500 lbs
Rear Axle Ratio	4.11 with DT466 Engine
Shock Absorbers	Gas Filled
Engines	DT466 In-Line 6 cylinder Turbo Diesel - 245HP
Fast Idle Controller	Standard INTERNATIONAL
Transmission	Allison 3000 PTS Series Electronic 5-Speed Automatic
Alternator	270 Amp Leece-Neville
Batteries - Chassis	3 - 12 Volt, 1950 CCA
Steering	Power Assisted
Steering Column	Locking, Energy Absorbing, Tilt w/ Cruise Control
Brakes	S-Cam Air Brake System with ABS
Fuel Tank	65 Gallon

MODEL 38 SPECIFICATIONS CONTINUED ON PAGE 58

Krystal Enterprises

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Chassis Specification - Standard 3200 for Model 38

Cab Paint	9219 White
Glass	Tinted All Windows, Power Assisted Door
Lights	Halogen Sealed Beam Headlights
Doors	Power Door Locks - Power Windows
Air Conditioner	Cab - 23,000 BTU INTERNATIONAL
Heater/Defroster	4-Speed Fan
Safety	3-Point Shoulder/ Lap Belts
Air Bags	Driver Safety Restraint System
Windshield Wipers	Intermittent
Gauges/Instrumentation	Voltmeter, Oil Pressure, Temperature, Fuel Gauge, Speedometer, Tachometer, Air Pressure Gauges
Mirrors	Power Remote with Heated Element
Tires	245/70R19.5F 16 PLY All Season Radial
Wheels	19.5" 8 - Hole, 8-Lug Steel
Wheelbase	K38 - 291"

Standard Equipment on 3200 Model 38

- DT466 6cyl. Turbo Diesel Engine 245HP
- Power Steering
- Full Air Brake System w/ABS
- 3 Heavy Duty INTERNATIONAL Batteries
- Allison 5-Speed Auto Transmission
- International Air Ride Rear Suspension
- 245/70R19.5F All Season Radial Tires
- 50 States Emissions
- 65 Gallon Fuel Tank
- Adjustable Tilt Steering Wheel
- Cruise Control
- Engine Oil Cooler
- Transmission Oil Cooler
- Automatic High Idle Controller
- Drive Shaft Guards
- .063 Aluminum Exterior Side Walls
- Welded Steel Cage Frame
- Cab Running Boards
- Air Ride Drivers Seat
- Captains Chairs - Co-Pilot
- 3/4" Resin Laminated Floor
- 2" Fiberglass Insulation
- Dual Overhead Racks w/Reading Lamps
- Smooth Rubber Flooring w/Ribbed Center Aisle
- Amaya Coach Seating
- 165,000 BTU Ducted Roof A/C System
- AM/FM Stereo w/CD Player - In Dash
- TV VCP Package
- Power Cab Door Locks
- Power Cab Windows
- Back-up Alarm
- Paging System
- Single Plug Air Actuated Sedan Entry Door
- Full Body Undercoating
- Base White Body Color
- Power Remote/Heated Mirrors
- Frameless Panoramic View Windows
- 270 Amp Leece-Neville Alternator
- S/S Wheel Inserts
- Rear Luggage Partition-Permanent
- Rear Luggage Door w/Electric Step
- Under Vehicle Storage Bins

General Vehicle Dimensional Specifications-Body & Chassis by Model

Features ↓ Models →	31	31W	35	35W	38
GVWR	25,500 lbs	25,500 lbs	25,500 lbs	25,500 lbs	27,500 lbs
Wheelbase	218"	218"	254"	254"	291"
Overall Length	30' 10"	30' 10"	34' 4"	34' 4"	38'
Turning Radius	29' 1"	29' 1"	33' 2"	33' 2"	37' 6"
Interior Height	76.5"	76.5"	76.5"	76.5"	75"
Interior Body Length (without Luggage)	262"	262"	302"	302"	330"
Interior Body Length (with Luggage)	224"	224"	258"	258"	286"
Depth of Luggage Compartment	38"	38"	44"	44"	44"
Clear Door Opening - Luggage Door	30½" x 64½"	30½" x 64½"	30½" x 64½"	30½" x 64½"	30½" x 64½"
Clear Door Opening - Single Plug	32½" x 81"	32½" x 81"	32½" x 81"	32½" x 81"	32½" x 81"
Clear Door Opening - Double Plug	40½"	40½"	40½"	40½"	40½"
Clear Door Opening - Swing Doors	42"	42"	42"	42"	42"
Clear Door Opening - Wheelchair Lift Door	N/A	42" x 73¾"	N/A	42" x 73¾"	N/A
Exterior Height	124"	124"	124"	124"	124"
Exterior Width (excluding Mirrors)	102"	102"	102"	102"	102"
Exterior Width (including Mirrors)	120"	120"	120"	120"	120"

General Vehicle Dimensional Specifications-Body & Chassis by Model (cont)

Features ↓ Models →	31	31W	35	35W	38
Interior Width - at Floor	89½"	89½"	89½"	89½"	89½"
Interior Width - at Shoulder	94½"	94½"	94½"	94½"	96"
Aisle Width	18"	18"	18"	18"	18"
Hip to Knee	26½ "	36½"	26½"	26½:	27½"
Seat Cushion Length	18"	18"	18"	18"	18"
Front of Seat Cushion to Seat Back	27½"	27½"	27½"	27½"	27½"
Floor Height from Ground at Rear	37½"	37½"	37½"	37½"	37½"
1st Step from Ground	14"	14"	14"	14"	14"
Riser Height	11"	11"	11"	11"	11"
Step Height	11½"	11½"	11½"	11½"	11½"

General Body Materials and Construction Measurements

Size of Steel Tubing used in Body Sidewall & Roof Structure	1" x 1½"
Center line Spacing of Tubing used in Body Sidewall & Roof Structure	30"
Wall Thickness of Steel Tubing used in Body Sidewall & Roof Structure	.095
Thickness of Aluminum Sidewall & One Piece Aluminum Roof	.063
Size of Steel Tubing used in Main Floor Structure	2" x 4"
Center line Spacing of Tubing used in Floor Structure	24"
Wall Thickness of Steel Tubing used in Floor Structure	.120
Thickness of Double Backed Insulated Fiberglass Batting Insulation	2"
Window Size - KK31 & KK35	32" x 40"
Window Size - KK38	45" x 41"

Vehicle Manufacturers Identification Label

Model 31 & 35

MANUFACTURED BY: KRYSTAL ENTERPRISES, INC. K K		INCOMPLETE VEHICLE MANUFACTURED BY: INTERNATIONAL	
DATE OF MANUFACTURE		DATE INC. VEH. MANUFACTURED:	
MO. YR.		MO. YR.	
VIN			
GVWR	25500	LB /	11567 KG
GAWR FRONT	8000	LB /	3629 KG, WITH
245/70R19.5F		TIRES,	
19.5x7.5	RIMS, @ 100	PSI /	690 KPa COLD
GAWR REAR	17500	LB /	7938 KG, WITH
245/70R19.5F		TIRES, DUAL	
19.5x7.5	RIMS, @ 100	PSI /	690 KPa COLD
PAINT CODE		VEHICLE TYPE: BUS	

Model 38

MANUFACTURED BY: KRYSTAL ENTERPRISES, INC. K K		INCOMPLETE VEHICLE MANUFACTURED BY: INTERNATIONAL	
DATE OF MANUFACTURE		DATE INC. VEH. MANUFACTURED:	
MO. YR.		MO. YR.	
VIN			
GVWR	27500	LB /	12474 KG
GAWR FRONT	10000	LB /	4536 KG, WITH
245/70R19.5 F		TIRES,	
19.5x7.5	RIMS, @ 120	PSI /	830 KPa COLD
GAWR REAR	17500	LB /	7938 KG, WITH
245/70R19.5F		TIRES, DUAL	
19.5X7.5	RIMS, @ 100	PSI /	690 KPa COLD
PAINT CODE		VEHICLE TYPE: BUS	

LABEL EXPLANATION

K # - This is your permanent Krystal Vehicle Identification number.

VIN # - This is your DMV Vehicle Identification Number.

GVWR - This is the gross rated capacity of your vehicle

GAWR Front - This is the rated capacity of the front axle

GAWR Rear - This is the rated capacity of the rear axle

Date Incomplete Vehicle Manufactured - This is the date the chassis was produced by INTERNATIONAL

Date Of Manufacture by Krystal - This is the date the vehicle was completed by KRYSTAL.

Paint Code - This is the master number for the paint specification and color used on your vehicle.

Tires, Rims - This indicates the required tire and rim sizes, and air capacities for your specific vehicle.

Krystal Enterprises

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GENERAL PREVENTATIVE MAINTENANCE INFORMATION

Please familiarize yourself with all INTERNATIONAL Manuals that have been provided with your new vehicle. They detail specific components, and specify how they are to be properly maintained. Both INTERNATIONAL and Krystal recommend that you study your manuals carefully before ever attempting to operate this vehicle for the first time.

IMPORTANT

The information contained in this section of your Krystal Owners Manual does not supersede any information that relates to a specific component of the INTERNATIONAL portion of your vehicle.

REGARDING THE INTERNATIONAL PORTION OF YOUR VEHICLE:

ANY PROCEDURE REFERENCED IN THE FOLLOWING PREVENTATIVE MAINTENANCE SECTION OF THIS MANUAL, SHOULD ALWAYS BE REFERENCED TO THAT SPECIFIC PORTION OF YOUR INTERNATIONAL CHASSIS OPERATORS MANUALS, SEE MAINTENANCE & SPECIFICATIONS - **SECTION "E" OF YOUR INTERNATIONAL CHASSIS MANUAL.**

LUBRICATION AND MAINTENANCE INTERVALS

After a vehicle is placed in operation, ***Regular Lubrication and Maintenance Intervals*** should be established, based upon the type of service and road conditions that the vehicle will be subjected to, such as; ON HIGHWAY, CITY, OR SEVERE SERVICE.

PREVENTATIVE MAINTENANCE SCHEDULE

The following Maintenance Schedules are provided as a convenient reference for the specified systems and components which require periodic service.

These schedules are not intended to be a complete list of all possible services to be performed on a regular basis, nor is it suggested that more frequent services not be considered.

Because of the different types of operations coaches are subjected to, the severity of service must be considered when establishing maintenance intervals. Therefore, any such intervals given in the following schedule must be adjusted according to the specific type of operation in which your particular vehicle will be used.

The intervals given include those recommended by Krystal Enterprises, Inc., and those recommended by INTERNATIONAL Truck and Engine Corporation. The recommendations should be considered as maximum intervals. It should be noted that maintenance inspection and service operations of shorter intervals are always preferable to longer intervals. Check your INTERNATIONAL Engine and Chassis Operation and Maintenance Manual for additional specific information not covered in this section of your Krystal Operators Manual.

MAINTENANCE OPERATIONS FOR THE DT466 ENGINES

OP NO.	Maintenance Operation	Inspection Intervals (whichever Miles, Kilometers, Hours, Months occurs First)									
		Daily	Every 21,100 km (15,000 miles), 550 hours, 6 months	Every 43,000 km, 30,000 miles, 1100 hours, 12 months	Every 24 months	Every 193,100 km, 120,000 miles, or 5000 hours	Every 290,000 km, 180-200,000 miles, or 6700 - 7500 hours	Annually	Every 322,000 km, 200,000 miles, or 3800 hours or 2 years	Every 241,000 km, 150,000 miles, or 6000 hours, or 2 ½ years	Every 500,000 km, 300,000 miles, or 12,000 hours, or 5 years
1	check oil level ¹	■									
2	check coolant level ¹	■									
3	drain water separator(fuel system) ^{1,2}	■									
4	inspect air to air cooler ¹	■									
5	inspect for external leakage ¹	■									
6	inspect air restriction indicator ³	■									
7	inspect belt ¹		■								
8	change engine oil & filter ⁴		Refer to Op 8 page 81								
9	check coolant SCA concentration (conventional coolant only) ¹		■								
10	inspect air intake piping and clamps ¹		■								

See page 68 for specific explanation of Notes

MAINTENANCE OPERATIONS FOR THE DT466 ENGINES

OP NO.	Maintenance Operation	Inspection Intervals (whichever Miles, Kilometers, Hours, Months occurs First)									
		Daily	Every 21,100 km (15,000 miles), 550 hours, 6 months	Every 43,000 km, 30,000 miles, 1100 hours, 12 months	Every 24 months	Every 193,100 km, 120,000 miles, or 5000 hours	Every 290,000 km, 180-200,000 miles, or 6700 - 7500 hours	Annually	Every 322,000 km, 200,000 miles, or 3800 hours or 2 years	Every 241,000 km, 150,000 miles, or 6000 hours, or 2 ½ years	Every 500,000 km, 300,000 miles, or 12,000 hours, or 5 years
11	measure air intake restriction ^{1,3,5}			■							
12	change fuel filters ⁶			■							
13	change coolant filter (if equipped) ^{7,9}			■						■	■
14	pressurize induction system ^{1,5}				■						
15	inspect vibration damper ^{1,8}					■					
16	adjust valve lash ^{5,8}					■					
17	measure crankcase pressure ⁵						■				
18	inspect turbo ¹						■				
19	inspect electrical system ¹							■			
20	service cooling system ⁷								■ (green)		■ (red)
21	extended life coolant ⁹									■	

See page 68 for specific explanation of Notes

Krystal Enterprises

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DETAILED MAINTENANCE NOTES FOR THE DT466 ENGINES

PLEASE REFER AS NECESSARY OR AS REQUIRED TO YOUR
INTERNATIONAL Engine Operation and Maintenance Manual for detailed explanations

1. Correct if necessary
2. If equipped
3. Service Air Cleaner elements as required
4. If fuel contains more than 0.05% sulfur, reduce oil change intervals, see page 81 of your INTERNATIONAL Engine Operation and Maintenance Manual
5. Refer to current Engine Diagnostic Manual sections in your INTERNATIONAL Engine Operation and Maintenance Manual
6. Change according to transfer pump minimum specifications
7. Refer to appropriate manual charts in Section 6 of your INTERNATIONAL Engine Operation and Maintenance Manual for cooling system maintenance schedules
8. Refer to EGES-210, DT466 and DT530 Diesel Engine Service Manual - Latest Revision
9. Extended life coolant does not require a filter. If a filter is installed, only a blank filter containing no supplemental coolant should be used.

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PREVENTIVE MAINTENANCE SCHEDULE

SPECIAL INSTRUCTIONS/SUGGESTIONS

It is strongly suggested that the following items always be observed or acted upon at every established maintenance interval or as otherwise specified by INTERNATIONAL and/or Krystal Enterprises.

Air Conditioning - serviced each spring

Front Axle - complete inspection, lubrication and adjustments

Rear Axle - complete inspection, re-torquing, replace worn parts

Air Brakes System - inspect, clean, lubricate and adjust all components

Desiccant Air Dryer - replace every 12 months

Hydraulic Brakes - inspect, clean, lubricate, replace fluid, shoes, linings

Catalytic Converter - check for proper function

Air Induction System - inspect complete system every 12 months

Chassis Mounted Charge Air Cooler - inspect daily

Cooling System - inspect coolant level daily, ***Note special instructions for Extended Life Coolant***

Fan Clutch - inspect every spring

Fuel System - inspect accelerator and system components frequently

Propeller Shaft - at regular lubrication intervals, all components should be inspected

KRYSTAL RECOMMENDED PREVENTIVE MAINTENANCE SCHEDULE

THE FOLLOWING PAGES SPECIFY THE MINIMUM REQUIREMENTS NECESSARY TO PROPERLY MAINTAIN YOUR VEHICLES SYSTEMS AND COMPONENTS

CHECK EVERY DAY:

- ▶ all items on Pre-Trip inspection (see page 8 & 9)
- ▶ side passenger door emergency release valve operation
- ▶ side passenger entry door, operation, locking, damage, and adjustment
- ▶ emergency roof hatch
- ▶ emergency egress window latches
- ▶ function of all interior and exterior lights
- ▶ check all seat belts for proper operation
- ▶ tire pressure, Model 31 & 35 - 100 psi Frt/Rr, Model 38 - 120 psi Frt & 100 psi Rr
- ▶ fluid leaks from, transmission, engine, power steering, engine coolant, gear oil, fuel
- ▶ drain fuel filter/water separator

CHECK EVERY MONTH:

- ▶ windshield washer fluid level
- ▶ door linkage and pivot arm lubrication
- ▶ lube rear Kwikkee step, (if equipped)
- ▶ clean air intake filter for A/C system
- ▶ tires for wear, and tread depth

KRYSTAL RECOMMENDED PREVENTIVE MAINTENANCE SCHEDULE

AT 5,000 MILES/600 HOURS DO THE FOLLOWING:

- ▶ inspect tires for wear and inspect tread depth
- ▶ rotate tires
- ▶ re-inspect torque settings on International Air Ride Suspension System
- ▶ lube door seals with silicon spray, check for proper sealing
- ▶ lube Vapor door rotary drive mechanism
- ▶ check the torque of all door hardware on Vapor door systems

AT 10,000 MILES/1200 HOURS DO THE FOLLOWING:

- ▶ inspect tires for wear and inspect tread depth
- ▶ rotate tires
- ▶ clean battery terminals
- ▶ check the torque of all door hardware on Vapor door systems

AT 15,000 MILES/1800 HOURS DO THE FOLLOWING:

- ▶ inspect tires for wear and inspect tread depth
- ▶ rotate tires
- ▶ inspect steering linkage, suspension, ball joints, drive shafts, and drive shaft guards
- ▶ inspect engine cooling system and hoses
- ▶ inspect brake system
- ▶ inspect exhaust system and heat shields
- ▶ inspect automatic transmission fluid and external filter element
- ▶ check wheels for end play and noise

KRYSTAL RECOMMENDED PREVENTIVE MAINTENANCE SCHEDULE

- ▶ inspect and lubricate steering idler arms
- ▶ replace cabin air filter, if equipped
- ▶ inspect half shaft boots, if equipped
- ▶ re-inspect torque settings on International Air Ride Suspension System
- ▶ clean air compressor intake filter
- ▶ lube door seals with silicon spray, check for proper sealing
- ▶ check air system for leaks, and electrical connections
- ▶ lube Vapor door rotary drive mechanism
- ▶ check the torque of all door hardware on Vapor door systems

AT 20,000 MILES/2400 HOURS DO THE FOLLOWING:

- ▶ inspect tires for wear and inspect tread depth
- ▶ rotate tires
- ▶ clean battery terminals
- ▶ check the torque of all door hardware on Vapor door systems

AT 25,000 MILES/3000 HOURS DO THE FOLLOWING:

- ▶ inspect tires for wear and inspect tread depth
- ▶ rotate tires
- ▶ check the torque of all door hardware on Vapor door systems
- ▶ clean condenser coils

KRYSTAL RECOMMENDED PREVENTIVE MAINTENANCE SCHEDULE

AT 30,000 MILES/3600 HOURS DO THE FOLLOWING:

- ▶ inspect tires for wear and inspect tread depth
- ▶ rotate tires
- ▶ inspect steering linkage, suspension, ball joints, drive shafts, and drive shaft guards
- ▶ inspect engine cooling system and hoses
- ▶ inspect brake system
- ▶ inspect exhaust system and heat shields
- ▶ change automatic transmission fluid and external filter element
- ▶ check wheels for end play and noise
- ▶ inspect and lubricate 4 x 2 ball joints
- ▶ inspect and lubricate steering idler arms
- ▶ replace cabin air filter, if equipped
- ▶ inspect half shaft boots, if equipped
- ▶ clean air compressor intake filter
- ▶ clean battery terminals
- ▶ lube door seals with silicon spray, check for proper sealing
- ▶ re-inspect torque specifications on INTERNATIONAL Suspension System
- ▶ check air system for leaks, and electrical connections
- ▶ lube Vapor door rotary drive mechanism
- ▶ check the torque of all door hardware on Vapor door systems
- ▶ inspect drive belts and replace if necessary

KRYSTAL RECOMMENDED PREVENTIVE MAINTENANCE SCHEDULE

AT 35,000 MILES/4200 HOURS DO THE FOLLOWING:

- ▶ inspect tires for wear and inspect tread depth
- ▶ rotate tires
- ▶ check the torque of all door hardware on Vapor door systems

AT 40,000 MILES/4800 HOURS DO THE FOLLOWING:

- ▶ inspect tires for wear and inspect tread depth
- ▶ rotate tires
- ▶ clean battery terminals
- ▶ check the torque of all door hardware on Vapor door systems

AT 45,000 MILES/5400 HOURS DO THE FOLLOWING:

- ▶ inspect tires for wear and inspect tread depth
- ▶ rotate tires
- ▶ inspect steering linkage, suspension, ball joints, drive shafts, and drive shaft guards
- ▶ inspect engine cooling system and hoses
- ▶ inspect brake system
- ▶ inspect exhaust system and heat shields
- ▶ check wheels for end play and noise
- ▶ inspect and lubricate steering idler arms
- ▶ replace cabin air filter, if equipped
- ▶ inspect half shaft boots, if equipped

KRYSTAL RECOMMENDED PREVENTIVE MAINTENANCE SCHEDULE

- ▶ clean air compressor intake filter
- ▶ lube door seals with silicon spray, check for proper sealing
- ▶ re-inspect torque specifications on INTERNATIONAL Suspension System
- ▶ check air system for leaks, and electrical connections
- ▶ lube Vapor door rotary drive mechanism
- ▶ check the torque of all door hardware on Vapor door systems

AT 50,000 MILES/6000 HOURS DO THE FOLLOWING:

- ▶ inspect tires for wear and inspect tread depth
- ▶ rotate tires
- ▶ clean battery terminals
- ▶ check the torque of all door hardware on Vapor door systems
- ▶ clean condenser coils

AT 55,000 MILES/6600 HOURS DO THE FOLLOWING:

- ▶ inspect tires for wear and inspect tread depth
- ▶ rotate tires
- ▶ check the torque of all door hardware on Vapor door systems

AT 60,000 MILES/7200 HOURS DO THE FOLLOWING:

- ▶ inspect tires for wear and inspect tread depth
- ▶ rotate tires
- ▶ inspect steering linkage, suspension, ball joints, drive shafts, and drive shaft guards

KRYSTAL RECOMMENDED PREVENTIVE MAINTENANCE SCHEDULE

- ▶ inspect engine cooling system and hoses
- ▶ inspect brake system
- ▶ inspect exhaust system and heat shields
- ▶ change automatic transmission fluid and external filter element
- ▶ check wheels for end play and noise
- ▶ replace wheel bearing grease seal
- ▶ inspect and lubricate steering idler arms
- ▶ replace cabin air filter, if equipped
- ▶ inspect half shaft boots, if equipped
- ▶ clean air compressor intake filter
- ▶ clean battery terminals
- ▶ lube door seals with silicon spray, check for proper sealing
- ▶ re-inspect torque specifications on INTERNATIONAL Suspension System
- ▶ check air system for leaks, and electrical connections
- ▶ lube Vapor door rotary drive mechanism
- ▶ check the torque of all door hardware on Vapor door systems
- ▶ inspect drive belts and replace if necessary

AT 65,000 MILES/7800 HOURS DO THE FOLLOWING:

- ▶ inspect tires for wear and inspect tread depth
- ▶ rotate tires
- ▶ check the torque of all door hardware on Vapor door systems

KRYSTAL RECOMMENDED PREVENTIVE MAINTENANCE SCHEDULE

AT 70,000 MILES/8400 HOURS DO THE FOLLOWING:

- ▶ inspect tires for wear and inspect tread depth
- ▶ rotate tires
- ▶ clean battery terminals
- ▶ check the torque of all door hardware on Vapor door systems

AT 75,000 MILES/9000 HOURS DO THE FOLLOWING:

- ▶ inspect tires for wear and inspect tread depth
- ▶ rotate tires
- ▶ inspect steering linkage, suspension, ball joints, drive shafts, and drive shaft guards
- ▶ inspect engine cooling system and hoses
- ▶ inspect brake system
- ▶ inspect exhaust system and heat shields
- ▶ check wheels for end play and noise
- ▶ inspect and lubricate steering idler arms
- ▶ replace cabin air filter, if equipped
- ▶ inspect half shaft boots, if equipped clean air compressor intake filter
- ▶ lube door seals with silicon spray, check for proper sealing
- ▶ re-inspect torque specifications on INTERNATIONAL Suspension System
- ▶ lube Vapor door rotary drive mechanism
- ▶ check the torque of all door hardware on Vapor door systems
- ▶ clean condenser coils

KRYSTAL RECOMMENDED PREVENTIVE MAINTENANCE SCHEDULE

AT 80,000 MILES/9600 HOURS DO THE FOLLOWING:

- ▶ inspect tires for wear and inspect tread depth
- ▶ rotate tires
- ▶ clean battery terminals
- ▶ check air system for leaks, and electrical connections
- ▶ check the torque of all door hardware on Vapor door systems

AT 85,000 MILES/10200 HOURS DO THE FOLLOWING:

- ▶ inspect tires for wear and inspect tread depth
- ▶ rotate tires
- ▶ check the torque of all door hardware on Vapor door systems

AT 90,000 MILES/10800 HOURS DO THE FOLLOWING:

- ▶ inspect tires for wear and inspect tread depth
- ▶ rotate tires
- ▶ replace engine and frame mounted fuel filters
- ▶ inspect steering linkage, suspension, ball joints, drive shafts, and drive shaft guards
- ▶ inspect engine cooling system and hoses
- ▶ inspect brake system
- ▶ inspect exhaust system and heat shields
- ▶ check wheels for end play and noise
- ▶ inspect and lubricate 4 x 2 ball joints

KRYSTAL RECOMMENDED PREVENTIVE MAINTENANCE SCHEDULE

- ▶ inspect and lubricate steering idler arms
- ▶ replace cabin air filter, if equipped
- ▶ inspect half shaft boots, if equipped clean air compressor intake filter
- ▶ clean battery terminals
- ▶ lube door seals with silicon spray, check for proper sealing
- ▶ re-inspect torque specifications on INTERNATIONAL Suspension System
- ▶ check air system for leaks, and electrical connections
- ▶ lube Vapor door rotary drive mechanism
- ▶ check the torque of all door hardware on Vapor door systems
- ▶ inspect drive belts and replace if necessary

AT 95,000 MILES/11400 HOURS DO THE FOLLOWING:

- ▶ inspect tires for wear and inspect tread depth
- ▶ rotate tires
- ▶ check the torque of all door hardware on Vapor door systems

AT 100,000 MILES/12000 HOURS DO THE FOLLOWING:

- ▶ inspect tires for wear and inspect tread depth
- ▶ rotate tires
- ▶ clean condenser coils
- ▶ clean battery terminals
- ▶ check the torque of all door hardware on Vapor door systems

SUPPLEMENTARY PREVENTIVE MAINTENANCE INFORMATION

In addition to the required Preventative Maintenance information included in the previous schedule, the following specific exceptions should be noted.

Extended Life Coolant

Extended Life Coolant must have ELC extender added at 150,000 miles in order to extend the life of the coolant to 300,000 miles, 5 years, or 12,000 hours of operation.

Rear Axle Lubricant:

Must be changed every 18 months or 90,000 miles.

Change Rear Axle Lubricant:

On Dana axles using synthetic fluid, fluid must be changed every 3 years or 250,000 miles.

Check your INTERNATIONAL Engine Operation and Maintenance Manual, for special operating condition maintenance requirements, that may be applicable due to your specific vehicle operating profile.

User Notes - Preventive Maintenance

Additional User Notes	Additional User Notes

Basic Troubleshooting Guide

The following section details basic troubleshooting techniques that will help you to understand and determine the best course of action regarding some commonly encountered problems.

PROBLEM	POSSIBLE SOLUTIONS
VIBRATION: Noises or Vibration at high speeds only, or in a certain range of speeds:	A certain range of speeds indicates a damaged or otherwise out-of-balance drive line, Contact your nearest INTERNATIONAL DEALER. The Krystal Service Dept. can recommend one near you.
REAR A/C BLOWER INOPERATIVE	Check to make sure the INTERNATIONAL front A/C unit is on. Check fuses on the A/C control relay board in ceiling. If the rear A/C is still not working, call the Krystal Service Dept.
MOVING CARGO PARTITION TO ADD ADDITIONAL SEATING	Remove seats in front of the Partition Wall and loosen all four bolts securing the wall. Then go behind the wall and remove the channel nut on the floor, this will allow the wall to be move back and then additional seating can be installed. Note: torque Seat Bolts to 35 ft. lbs.
EXTERIOR LIGHTING	One or all exterior clearance lights inoperative, please refer to the INTERNATIONAL wiring schematic in the Krystal Electrical Schematic Manual. Exterior running lights work off of the Krystal relay board.
SLIDER WINDOWS HARD TO OPEN AND CLOSED	If any of the windows start to stick during opening or closing, simply spray both side tracks with silicone spray and work the windows a few times to lubricate the tracks. This should be done approximately every three months.

Basic Troubleshooting Guide

PROBLEM	POSSIBLE SOLUTIONS
PAGING SYSTEM INOPERATIVE	Check the 15 amp fuse, on the fuse panel behind the dash cover, on the passenger side. See page 92-93 for fuse legend & location. See instructions for the paging system located on page 22.
NO TELEVISION RECEPTION	If the TV has power, but you cannot pickup any stations, make sure VCP mode button on the P.A. System is engaged and the VCP power button is engaged.
REAR VCP & TV INOPERATIVE	Check to make sure all connections on the back of both units are tight. Check the fuse located at the front face of the TV, and on the backside of the VCP.
EXTERIOR SEALANTS CRACKING OR LIFTING	If the exterior seams of the bus ever crack or start lifting, simply clean the area with rubbing alcohol or mineral spirits completely. After this has been done you can remove the old silicone by using a sharp knife or razor cutter. Clean the area again with the above cleaners and apply a thin bead of white exterior silicone and smooth the bead with your finger for a smooth appearance.
REAR ELECTRIC STEP INOPERATIVE	Check to make sure the step switch is turned on. This switch is located inside the cargo area on the right hand sidewall. If this will not power up the step, call the Krystal Service Dept. The rear step should be lubricated every 30 days to ensure proper operation of the step.
REAR STEREO/CD INOPERATIVE	Check to make sure all connections are tight. Also remove the stereo and check the fuse located on the backside of the stereo.

Basic Troubleshooting Guide

PROBLEM	POSSIBLE SOLUTIONS
CANNOT REMOVE WATER FROM LAVATORY	Make sure fresh water tank has water in it and the water pump switch is in the on position. NOTE: Always be sure to turn the water pump switch off when not in use. Failure to do so could cause a steady drain on the auxiliary battery or could cause damage to the water pump. The fresh water fill is located under the bus at the rear of the vehicle.
PASSENGER LIGHTS INOPERATIVE	Check to make sure the switch on the overhead control panel is turned on. Check the fuse located on the INTERNATIONAL fuse panels behind the dash cover. (Ref. diagram on pages 92-93)
BACK-UP ALARM INOPERATIVE	Check to make sure reverse lights are coming on, if not, check the fuse located on the INTERNATIONAL fuse panels behind the dash cover. (Ref. diagram on pages 92-93)

Troubleshooting Notes

PROBLEM	POSSIBLE SOLUTIONS

Troubleshooting Notes

PROBLEM	POSSIBLE SOLUTIONS

INTERNATIONAL'S Diamond Logic Electrical System

This vehicle is equipped with the Diamond Logic Electrical System. This system is self diagnosing, and self monitoring, making troubleshooting and repairs quicker and faster than conventional systems.

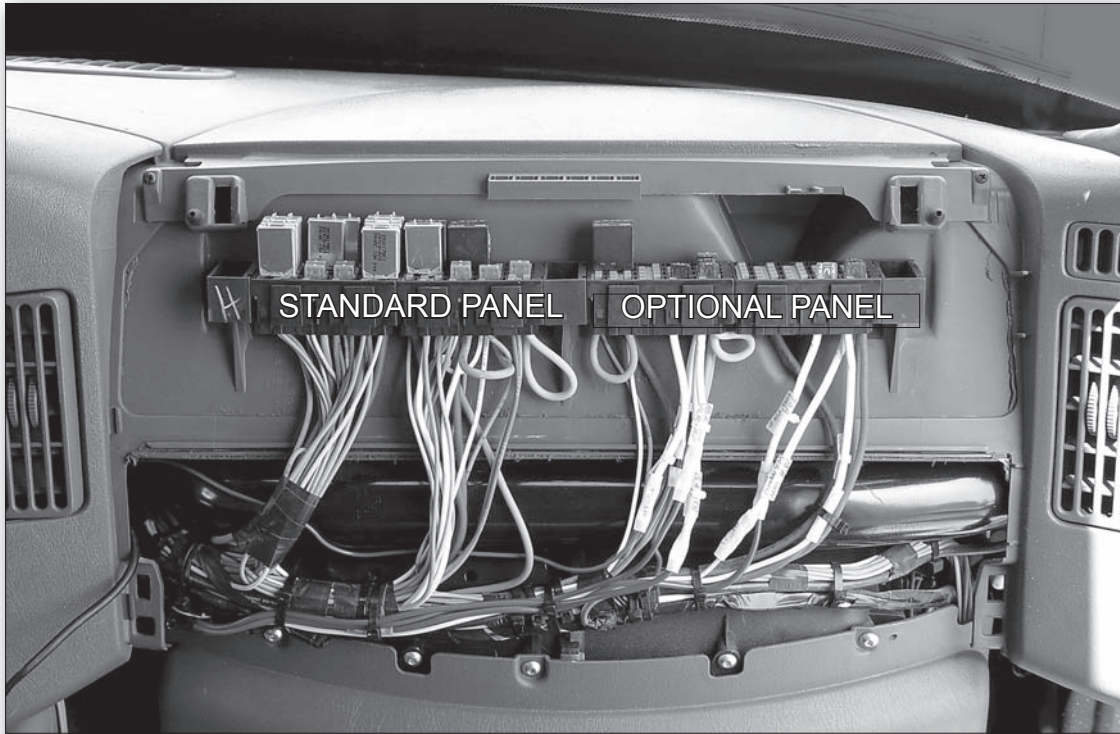
This system should only be diagnosed and repaired by authorized service centers. Any attempt by unauthorized personnel may damage your system and/or jeopardize your warranty.

Your new Diamond Logic Electrical System and all component interfaces are covered by INTERNATIONAL and Krystal to provide you with seamless coverage for your electrical system.

When problems arise, simply follow the procedures as outlined in the Parts-Service-Warranty section in this manual.

The following pages will provide you with schematics and diagrams that can help you understand the general concept of your buses electrical components and how they are connected. These schematics and diagrams will prove helpful when trying to determine which connection is faulty and where it is located. The following pages will also provide some basic general information about your buses possible configuration, including some information which is provided in greater detail in your INTERNATIONAL product manuals.

INTERNATIONAL'S Diamond Logic Electrical System

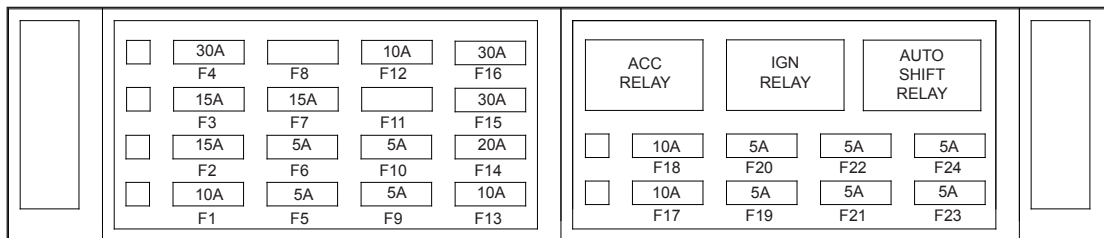


Fuses and Circuit Breakers are located behind the dash cover on the passenger side, See page 92-93 for diagrams & legends.

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Legend for Standard Fuse & Circuit Breaker Panel



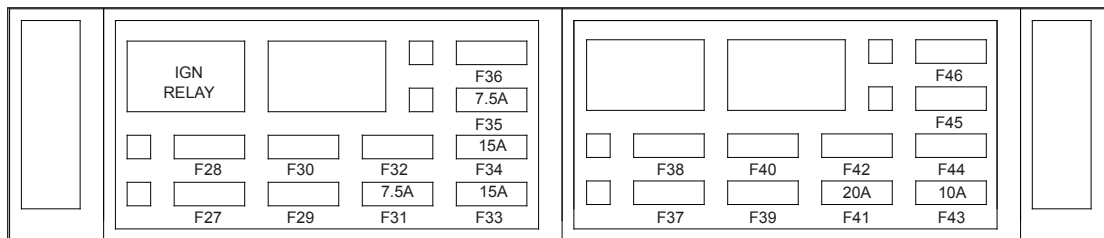
F1	ACC		CB/RADIO
F2	BAT	STD	INST CLUSTER
F3	BAT	STD	OWNER/OPERATOR
F4	BAT	STD	HEATER - A/C BLOWER
F5	ACC	STD	SYS CONTROLLER / 6 SWITCH PACK
F6	BAT	STD	KEY SWITCH / DIAG CONN
F7	BAT	OPT	CIGAR LIGHTER
F8			NOT AVAIL
F9		OPT	OPT PANEL LIGHT
F10	BAT	STD	HEATER - A/C CONTROL
F11			NOT AVAIL
F12	BAT	STD	DOMELIGHTS / MAP LIGHT / RADIO
F13	*	OPT	RIGHT MIRROR HEAT
F14	BAT	OPT	AUX POWER SOURCE
F15	BAT	OPT	PWR WINDOW / LOCKS DRIVER DOOR
F16	BAT	OPT	PWR WINDOW / LOCKS PASS DOOR

F17	IGN	OPT	ALLISON - LCT/EATON AUTOSHIFT - AUTOCLUTCH
F18		OPT	LEFT MIRROR HEAT
F19	IGN	STD	INST CLUSTER / HTR - A/C CONTROLS
F20	IGN	STD	SYSTEM CONTROLLER / NTR - A/C BLOW
F21	IGN	STD	OWNER / OPERATOR
F22	IGN	OPT	DRIVERS INFO CENTER
F23	IGN	OPT	COMPASS / TEMP
F24	IGN	**	ACCELERATOR CLUTCH SW

PLEASE NOTE:

The legend shown on this page reflects all available standard configurations and may include items not ordered with your vehicle.

Legend for Optional Fuse & Circuit Breaker Panel



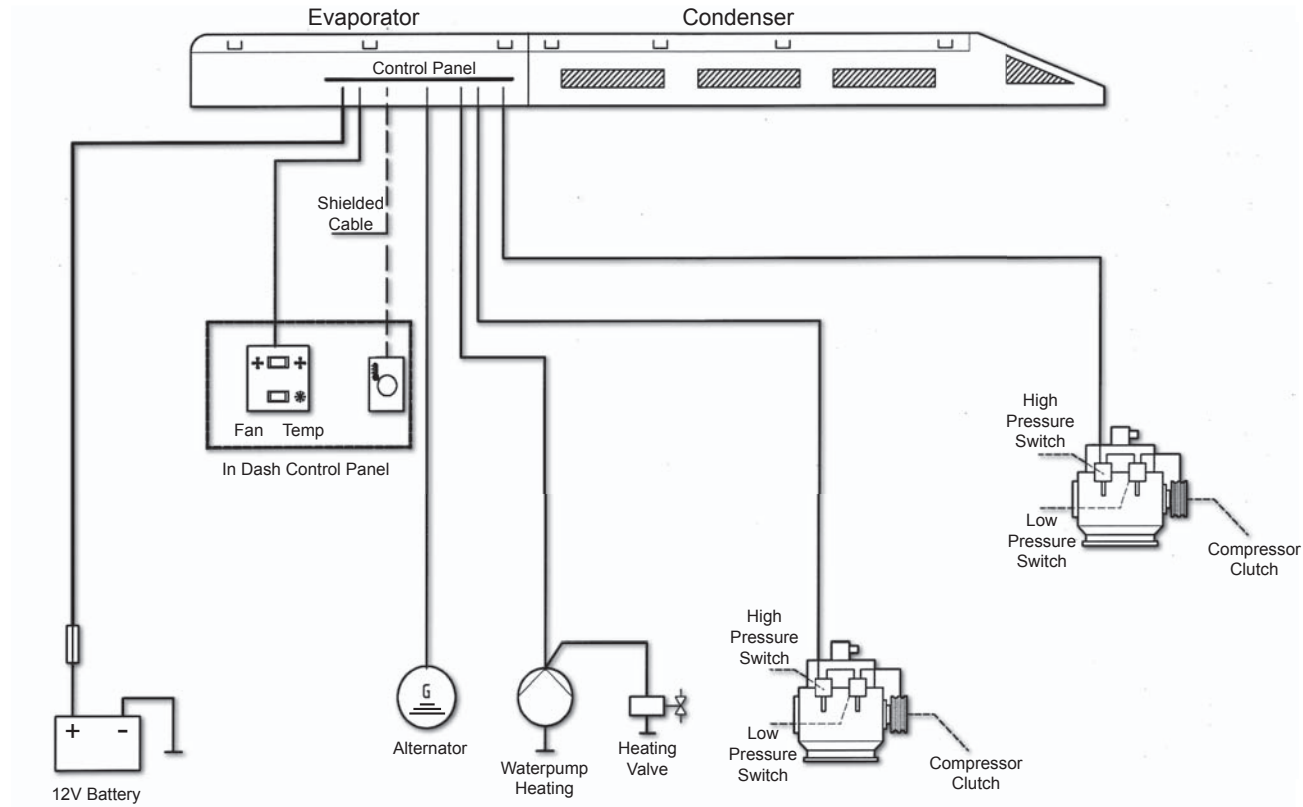
F27			
F28	IGN	STD	
F29	IGN	STD	
F30	IGN	STD	
F31	IGN	STD	REAR CAMERA
F32	IGN	STD	
F33	IGN	OPT	P.A. / DVD
F34	IGN	OPT	A/C IGNITION TRIGGER
F35	ACC	OPT	IGNITION / RADIO
F36	ACC	STD	

F37	BAT	OPT	
F38	BAT	OPT	
F39	BAT	OPT	
F40	BAT	OPT	
F41	BAT	OPT	REAR STEP
F42	BAT	OPT	
F43	BAT	OPT	RADIO MEMORY
F44	BAT	OPT	
F45		OPT	
F46	ACC	OPT	

PLEASE NOTE:

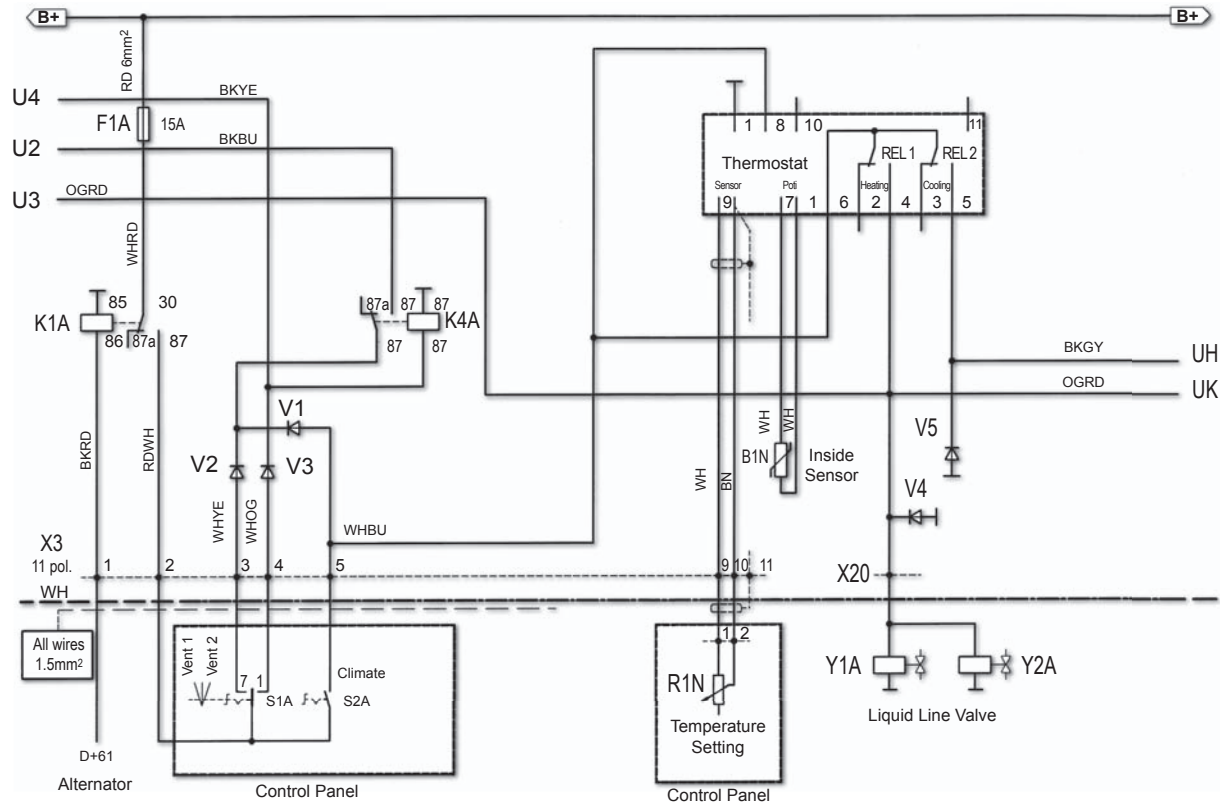
The legend shown above reflects all available options and may include options not ordered with your vehicle.

Carrier Rooftop Air Conditioning System Diagram



Krystal Enterprises

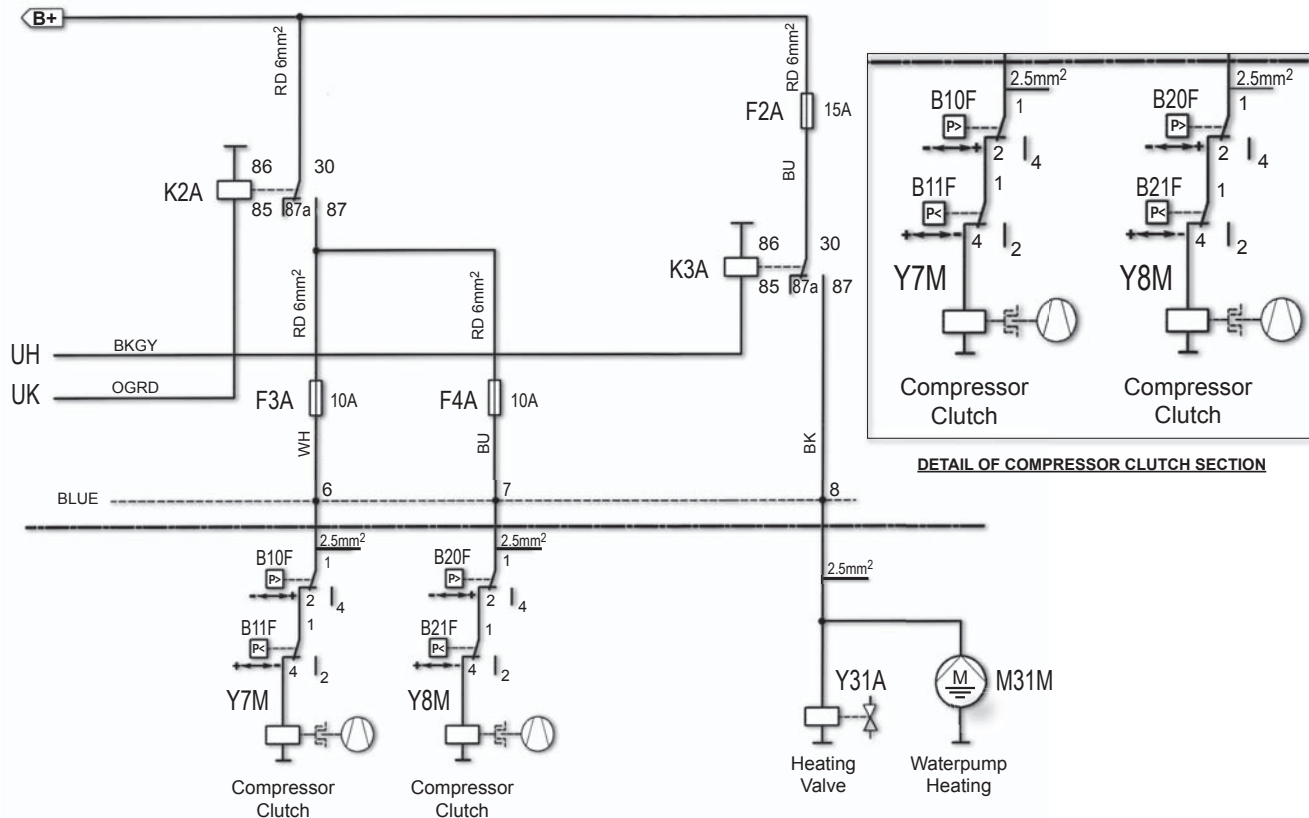
Carrier Control Panel-Thermostat Schematic



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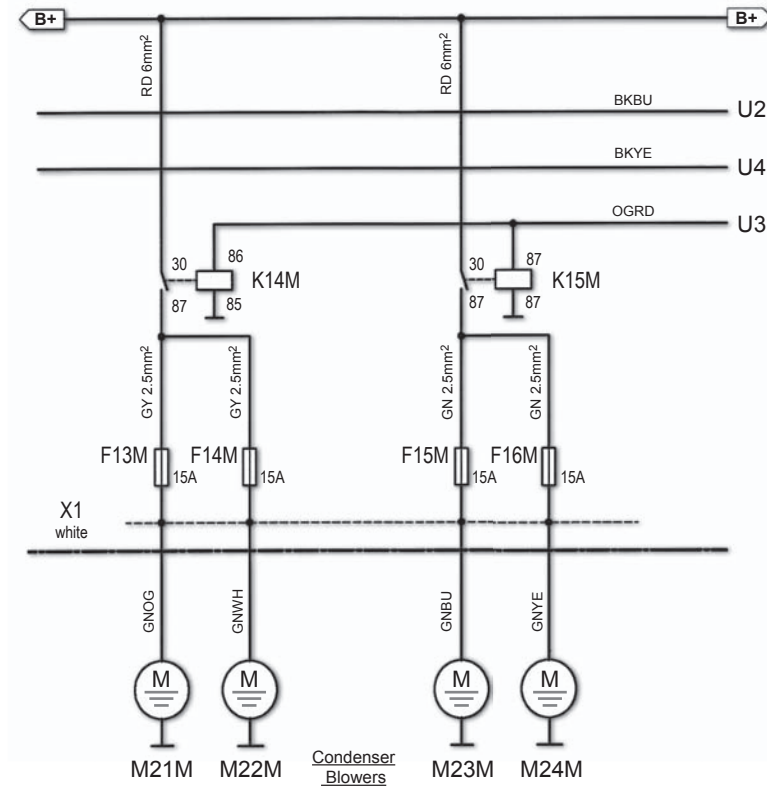
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Compressor - Heatpump Schematic



Krystal Enterprises

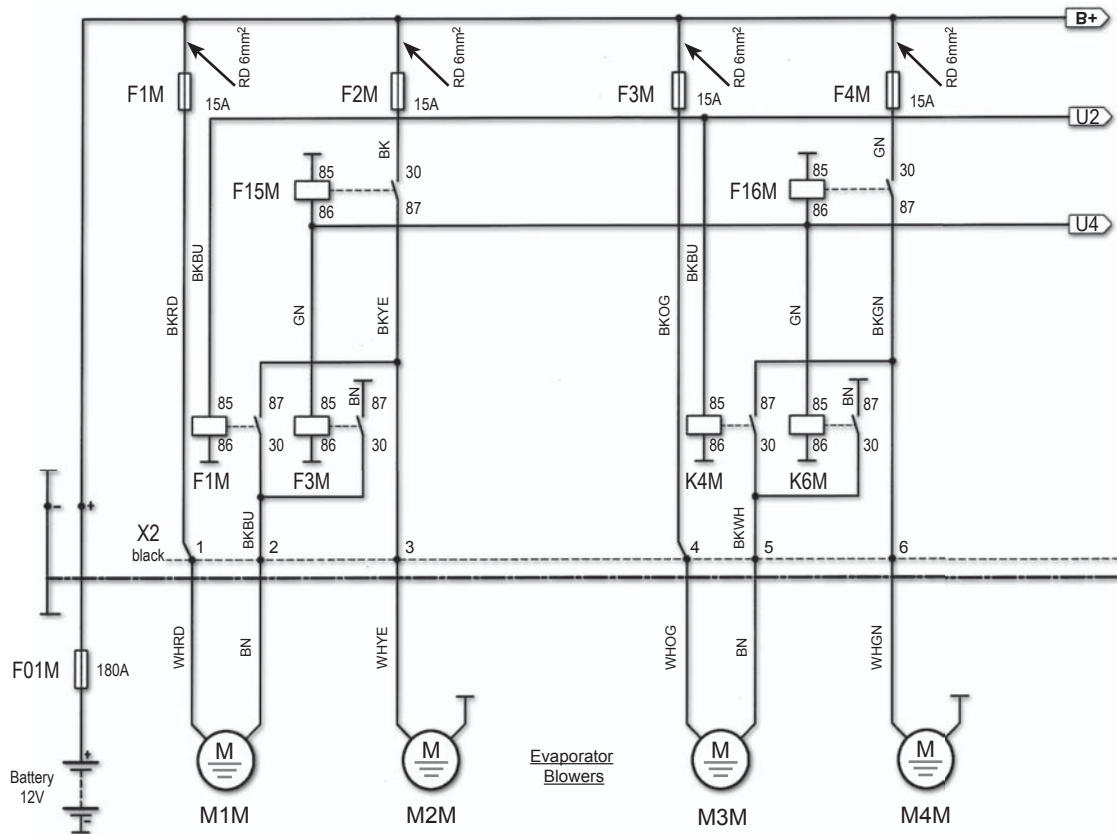
Condenser Blowers Schematic



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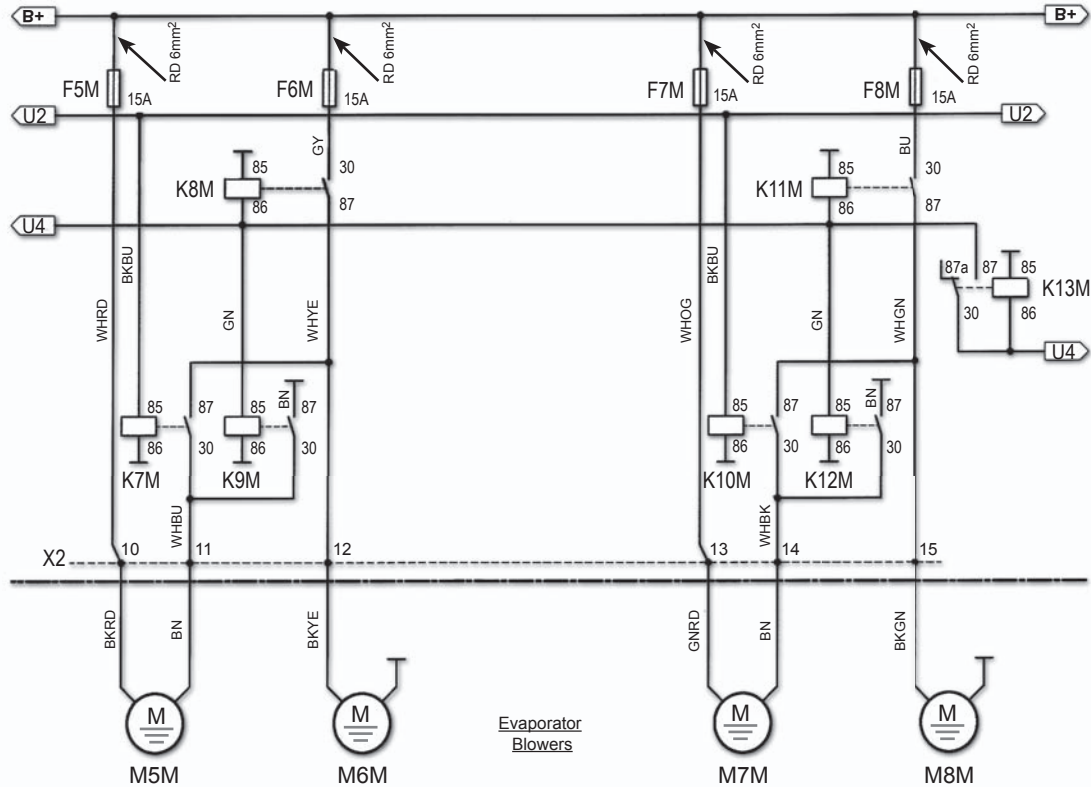
Evaporator Blowers Schematic



Krystal Enterprises

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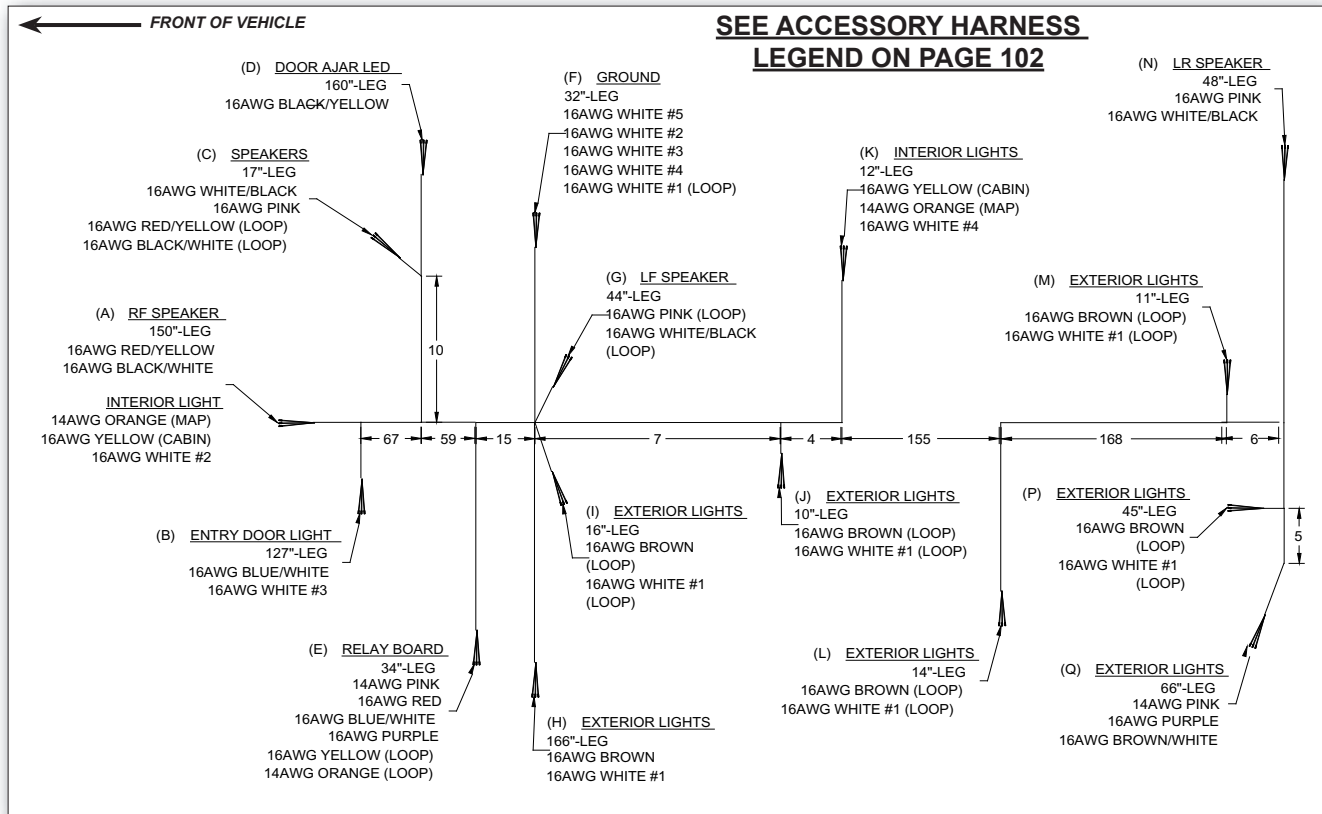
Evaporator Blowers Schematic



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Model 35 & 38 Accessory Harness-Front Portion



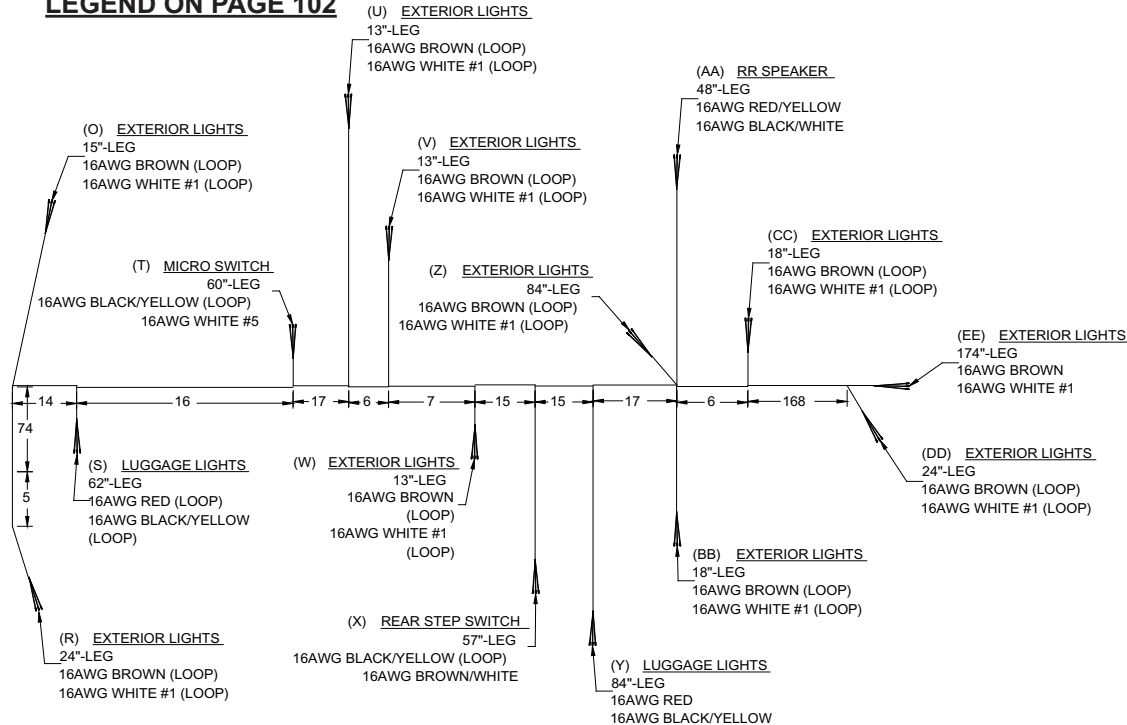
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Model 35 & 38 Accessory Harness-Rear Portion

SEE ACCESSORY HARNESS

LEGEND ON PAGE 102

REAR OF VEHICLE →



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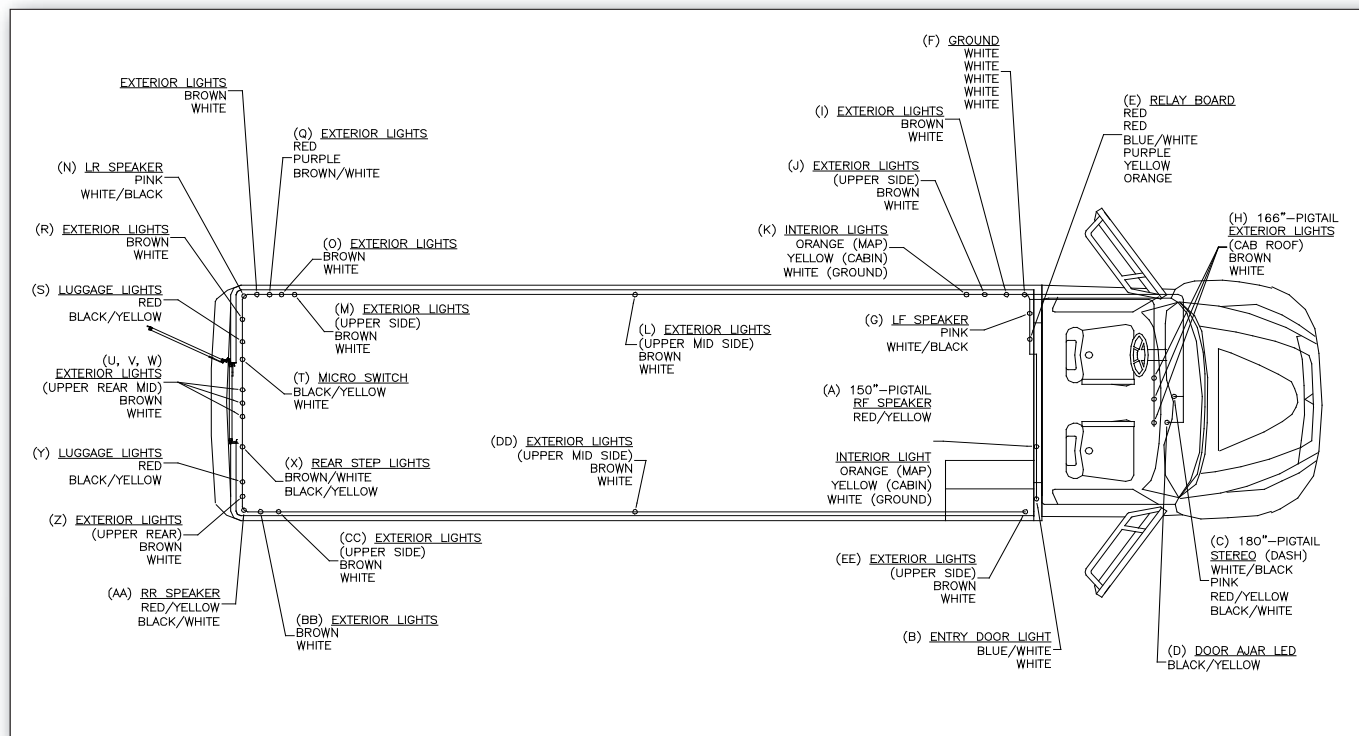
Model 35 & 38 Accessory Harness Legend

AWG	COLOR	FROM LOCATION	TO DESTINATION	DESCRIPTION	NOTES
16	BROWN/WHITE	Q	X	REAR STEP SWITCH	
16	WHITE #1	H	LOOP @ I, J, L, M, O, P, R, U, V, W,	EXTERIOR LIGHTS GROUND	
			Z, BB, CC, DD, ending @ EE	EXTERIOR LIGHTS GROUND	
16	BROWN	H	LOOP @ I, J, L, M, O, P, R, U, V, W,	EXTERIOR LIGHTS POWER	
			Z, BB, CC, DD, ending @ EE	EXTERIOR LIGHTS POWER	
16	WHITE #4	F	K	INTERIOR LIGHT GROUND	
16	WHITE #5	F	T	MICRO SWITCH GROUND	
16	PURPLE	E	Q	RELAY BOARD TO REAR STEP	
16	RED	E	LOOP @ S, ending @ Y	RELAY BOARD TO LUG. LIGHTS	
14	PINK	E	Q	RELAY BOARD TO REAR STEP	
16	BLACK/YELLOW	D	LOOP @ S, T, X, ending @ Y	DOOR AJAR LED	
16	PINK	C	LOOP @ G, ending @ N	SPEAKERS	
16	WHITE/BLACK	C	LOOP @ G, ending @ N	SPEAKERS	
16	WHITE #3	B	F	ENTRY DOOR LIGHT GROUND	
16	BLUE/WHITE	B	E	ENTRY DOOR LIGHT	
14	ORANGE	A	LOOP @ E, ending @ K	INTERIOR (MAP) LIGHTS	
16	WHITE #2	A	F	INTERIOR LIGHTS GROUND	
16	YELLOW	A	LOOP @ E ending @ K	INTERIOR (CABIN) LIGHTS	
16	BLACK/WHITE	A	LOOP @ C ending @ AA	SPEAKER	
16	RED/YELLOW	A	LOOP @ C ending @ AA	SPEAKER	
AWG	COLOR	FROM LOCATION	TO DESTINATION	DESCRIPTION	NOTES

— WIRE LIST —

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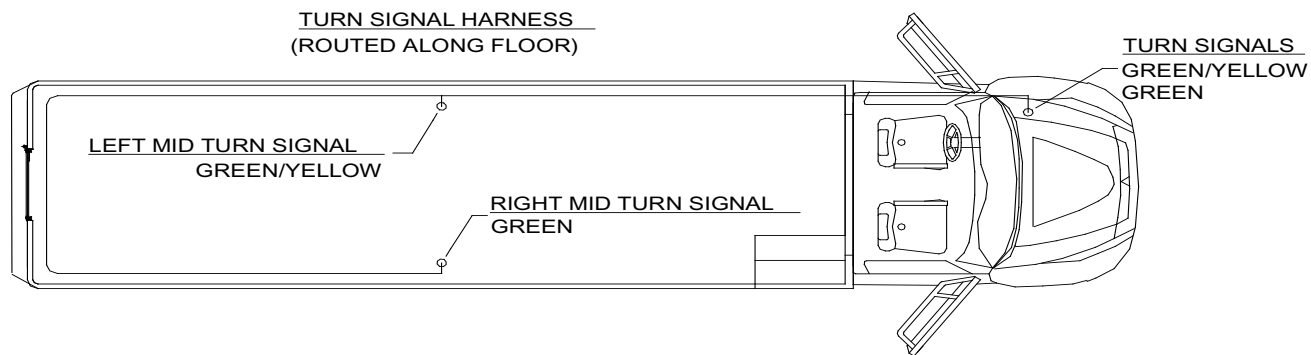
Model 35 & 38 Accessory Harness Wiring Diagram- Part 1



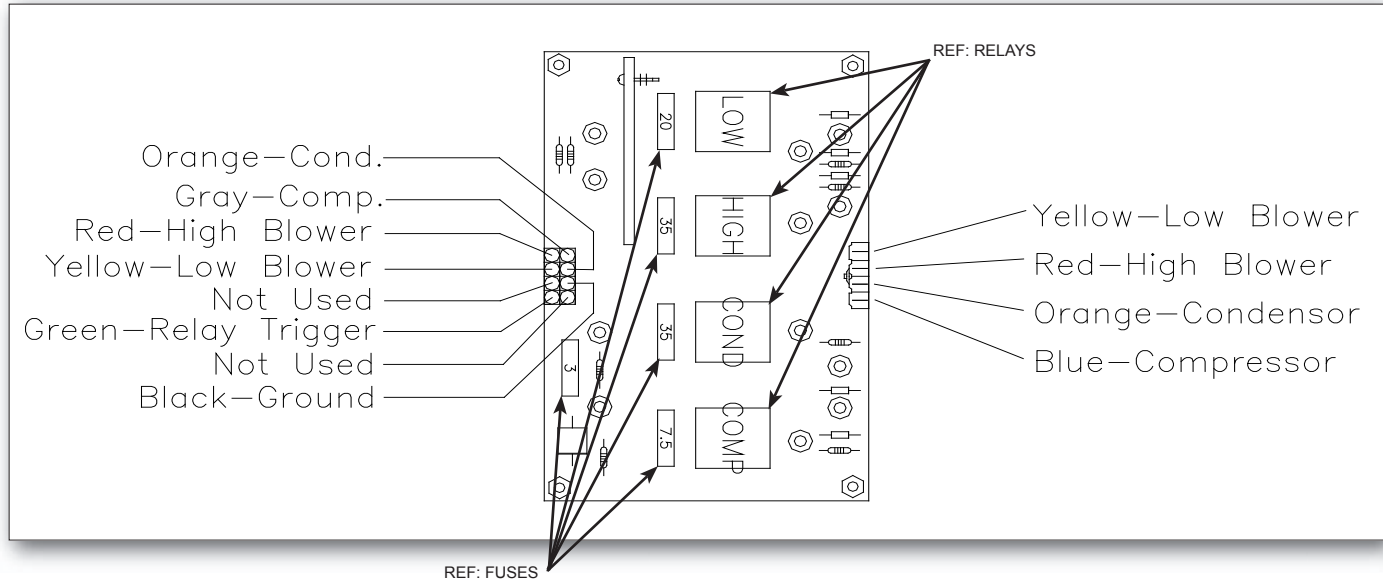
Krystal Enterprises

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Model 35 & 38 Accessory Harness Wiring Diagram- Part 2

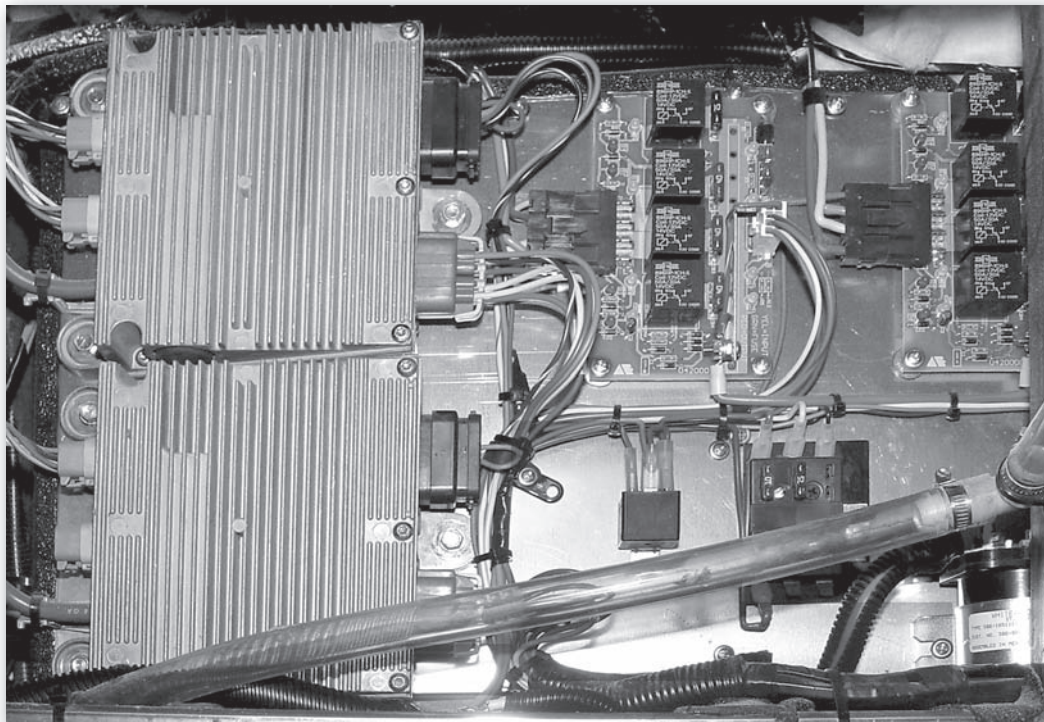


A/C Module Wiring Diagram - Front/Rear



Details of A/C Modules as shown in Diagrams on pg. 107 & 109

Circuit Board Assembly Phase 1



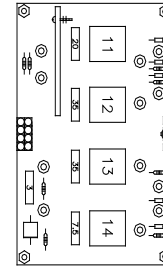
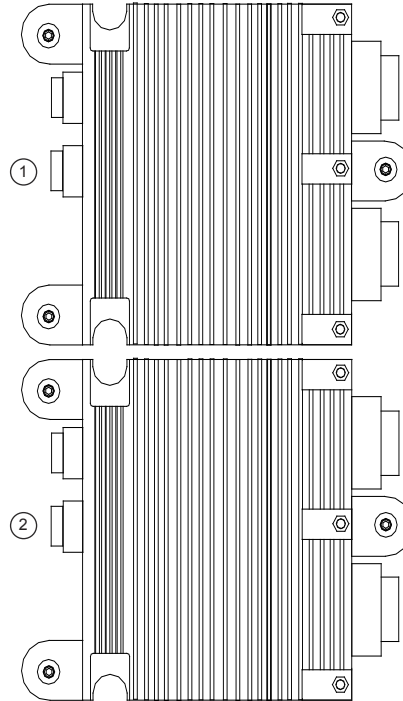
Circuit board located in compartment above driver

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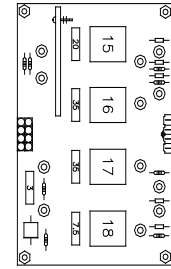
Circuit Board Phase 1 - Electrical Diagram

①	REMOTE POWER MODULE # 1
②	REMOTE POWER MODULE # 2
③	HEATER FUSE
④	BACK-UP CAMERA, TV MONITOR, VCP
⑤	NOT USED - FOR OPTIONS ONLY
⑥	SWITCH PANEL FUSE
⑦	NOT USED - FOR OPTIONS ONLY
⑧	NOT USED - FOR OPTIONS ONLY
⑨	POWER SOLENOID - REAR A/C UNIT
⑩	HEAT PUMP RELAY
⑪	FRONT A/C LOW SPEED RELAY \ 20 AMP FUSE
⑫	FRONT A/C HIGH SPEED RELAY \ 35 AMP FUSE
⑬	FRONT A/C CONDENSOR RELAY \ 35 AMP FUSE
⑭	FRONT A/C COMPRESSOR RELAY \ 7.5 AMP FUSE
⑮	REAR A/C LOW SPEED RELAY \ 20 AMP FUSE
⑯	REAR A/C HIGH SPEED RELAY \ 35 AMP FUSE
⑰	REAR A/C CONDENSOR RELAY \ 35 AMP FUSE
⑱	REAR A/C COMPRESSOR RELAY \ 7.5 AMP FUSE

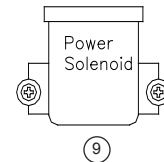
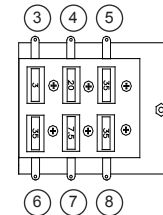
This board configuration was
last used through Feb. '04



Front A/C
Module



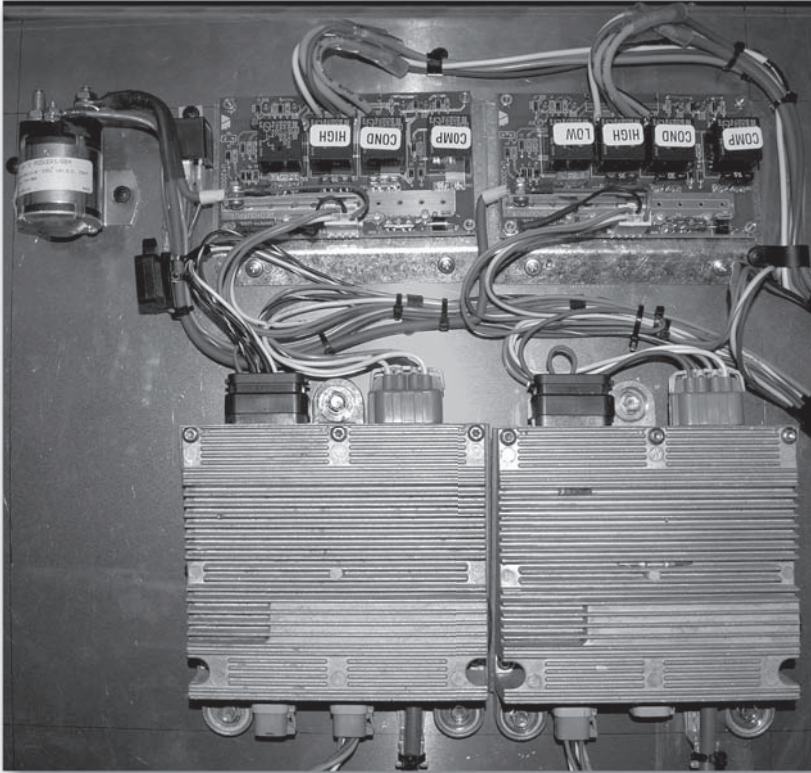
Rear A/C
Module



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Circuit Board Assembly Phase 2

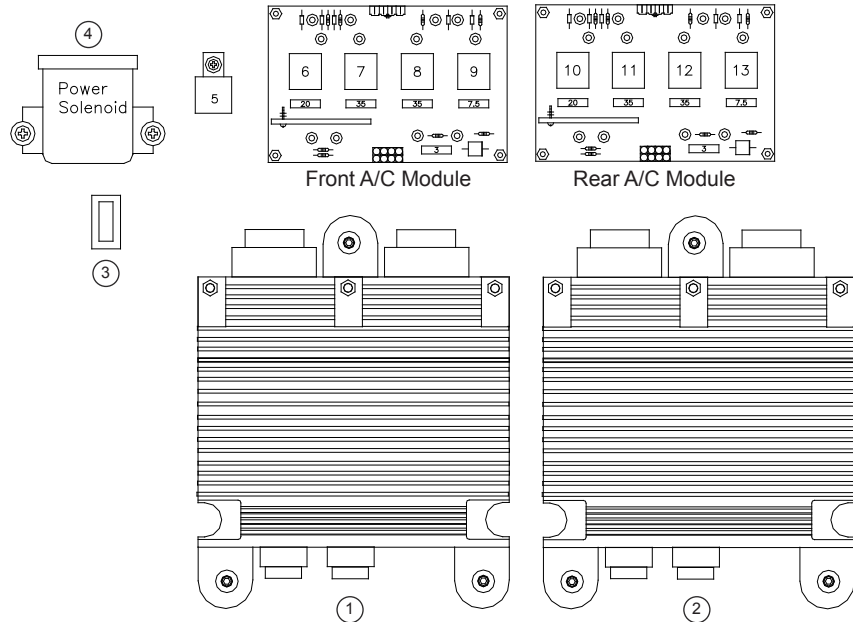


Circuit Board Assembly located on divider panel behind driver's seat.

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Circuit Board Phase 2 - Electrical Diagram

①	REMOTE POWER MODULE # 1
②	REMOTE POWER MODULE # 2
③	HEAT PUMP RELAY FUSE
④	POWER SOLENOID - REAR A/C UNIT
⑤	HEAT PUMP RELAY
⑥	FRONT A/C LOW SPEED RELAY \ 20 AMP FUSE
⑦	FRONT A/C HIGH SPEED RELAY \ 35 AMP FUSE
⑧	FRONT A/C CONDENSOR RELAY \ 35 AMP FUSE
⑨	FRONT A/C COMPRESSOR RELAY \ 7.5 AMP FUSE
⑩	REAR A/C LOW SPEED RELAY \ 20 AMP FUSE
⑪	REAR A/C HIGH SPEED RELAY \ 35 AMP FUSE
⑫	REAR A/C CONDENSOR RELAY \ 35 AMP FUSE
⑬	REAR A/C COMPRESSOR RELAY \ 7.5 AMP FUSE



PARTS - SERVICE - WARRANTY

OBTAINING PARTS

When parts are required for a warranty repair, all parts will be handled by the KRYSTAL Service Department.

All other Non-Warranty parts needs can be handled by contacting the KRYSTAL PARTS DEPARTMENT, directly at 1-800-845-4883. You may purchase parts directly over the counter, or have them shipped to you, usually within 24 hours. In order to expedite your parts order, please have your KRYSTAL ENTERPRISES serial number, which starts with K-#####, and is located on the drivers door jamb of all our vehicles.

UNDERSTANDING WARRANTY POLICY *(read the following sections carefully)*

Should your bus require service related to the converted areas of the vehicle, ***read this section first, before taking any action.*** By doing so, you will clearly understand the KRYSTAL SERVICE PROCESS, and avoid possible delays. NEVER initiate a warranty repair without prior approval of the KRYSTAL SERVICE DEPARTMENT. Not following this procedure could void your warranty reimbursement for that particular repair.

PARTS - SERVICE - WARRANTY

WHO SHOULD PERFORM WARRANTY SERVICE ON YOUR VEHICLE

If there is any doubt as to whether or not a repair is related to the KRYSTAL WARRANTY, call the KRYSTAL SERVICE DEPARTMENT at 1-800-845-4883, this may save you time wasted at a chassis dealer or another shop, for a problem appropriately solved by contacting KRYSTAL SERVICE DEPARTMENT.

If the problem is conversion related, then it can either be repaired at our Brea, California facility, or by a shop that we recommend in your area, or by a shop of your choice. This procedure is true of both warranty and non-warranty repairs. Depending on the nature of the problem, it may be necessary to have the warranty repair done at our Brea, California facility.

CAUTION ABOUT TOWING!

If it becomes necessary to tow your bus, a flat bed rig is preferred. UNDER NO CIRCUMSTANCES, should the bus be towed by lifting the rear end, serious frame damage can occur.

PARTS - SERVICE - WARRANTY

WARRANTY VERSUS NON-WARRANTY

Whether a particular problem is covered under the KRYSTAL WARRANTY depends, in some cases, on several factors. The KRYSTAL SERVICE DEPARTMENT, determines coverages ahead of time on a case-by-case basis, either over the phone or at our Brea, California facility.

HAVING NON-WARRANTY REPAIRS PERFORMED

If the service manager has determined that the repair is not covered, or you are sure that it is not covered, we would be happy to recommend a shop in your area, or schedule an appointment with the KRYSTAL SERVICE DEPARTMENT, whichever is more convenient.

HAVING WARRANTY REPAIRS PERFORMED

There are three (3) methods:

1. Repair is done at the KRYSTAL SERVICE DEPARTMENT, in Brea, California
2. Repair is done at a KRYSTAL authorized service facility near you.
3. Repair is done at a shop of your choice, with prior approval of the KRYSTAL SERVICE DEPARTMENT

PARTS - SERVICE - WARRANTY

HAVING WARRANTY REPAIRS PERFORMED (con't)

If either method 2 or 3 as described on the previous page are to be used, you must obtain pre-authorization and a KRYSTAL ENTERPRISES SERVICE DEPARTMENT repair authorization number (R.A.N), in advance of performing any repairs. Both requirements may be accomplished from a single phone call to the KRYSTAL SERVICE DEPARTMENT, at 1-800-845-4883.

If method 3 is used, simply pay for the work and mail a copy of the invoice with the repair authorization number, and your KRYSTAL vehicle ID number, which is found on the vehicle ID tag on the drivers door jamb) on the invoice, so your claim(s) can be processed without any problems. You will be reimbursed within 30 days.

Send all invoices to the service manager at:

KRYSTAL ENTERPRISES
Attn: Service Department Manager
2701 East Imperial Highway
Brea, California 92821

Krystal Enterprises

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Vendor Reference Listing

Vendor	Warranty Period
ALLISON TRANSMISSION 1-800-252-5283	3 Years, Unlimited Miles
AUTOMOTIVE CLIMATE CONTROL A/C 1-800-462-6322	2 Years, Unlimited Miles
AUDIOVOX TV & VCP 1-800-274-1886	1 Year, Unlimited Miles
CARRIER A/C 1-800-673-2431	2 Years, Unlimited Miles
FREEDMAN SEATING 1-713-929-6100	2 Years or 20,000 Miles, Whichever Comes First
GOODYEAR TIRES 1-800-466-3982	Free Replacement 1st year or up to 3/32" tread ware, then pro-rated thereafter
PHOENIX USA 1-931-561-6128	3 Years
INTERNATIONAL ROAD SERVICE 1-800-448-7825	1 Year Towing
KRYSTAL SERVICE DEPT 1-800-845-4883	See Copy of Krystal Warranty
KWIKEE ELECTRIC STEPS 1-800-736-7366	1 Year or 12,000 Miles, Whichever Comes First
ROSEN 1-866-467-6736	1 Year, Unlimited Miles
PANASONIC 1-949-251-1851	1 Year, Unlimited Miles
SHURFLOW WATER PUMPS 1-800-854-3218	2 Years, Unlimited Miles
SONY STEREO 1-800-282-2848	1 Year, Unlimited Miles
TRANSPEC WORLDWIDE 1-810-274-9400	1 Year, Unlimited Miles
VOYAGER PA SYSTEM 1-800-274-1886	1 Year, Unlimited Miles

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Vendor Reference Listing

Vendor

Warranty Period



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KRYSTAL ENTERPRISES LIMITED WARRANTY

Krystal Enterprises (hereinafter referred to as Krystal Enterprises and Krystal) is the final stage manufacturer of an incomplete vehicle, which is manufactured and separately warranted by the incomplete vehicle manufacturer. This limited Warranty thus does not extend to any part or portion of the incomplete vehicle except as specifically required by any applicable Federal law or regulation.

Krystal Enterprises warrants to the original purchaser of each new Krystal Enterprises bus, that all parts (except electronic parts which are warranted by their original manufacturer) installed by Krystal will be free from defects in material and workmanship under normal use and service for one (1) year, with unlimited mileage, from the date of purchase by the original retail customer.

Krystal Enterprises further warrants to the original purchaser of each new Krystal Enterprises bus, the body structure which is defined as the cage, skin, front and rear caps, and floor structure to be free from defects, in material and workmanship under normal use and service for five (5) years or 100,000 miles, whichever comes first, from the date of purchase by the original retail customer.

In the event of a Warranty claim, Krystal reserves the right to replace or repair the defective part. The original retail customer must return the bus to the original selling Authorized Dealer for the necessary authorization and parts. THE DEALER MUST OBTAIN, PRIOR TO PERFORMING ANY WORK, A REPAIR AUTHORIZATION NUMBER (R.A.N) ON ANY KRYSTAL ENTERPRISES BUS. If the selling Dealer is unable to remedy the situation, the original retail customer should contact the Warranty Department of Krystal Enterprises. If the selling

Krystal Enterprises

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dealer does not perform repair work on premise, the Dealer must call the Krystal Warranty Department for instructions on proceeding with the repair via an authorized repair facility.

If the bus was not purchased from a Krystal Authorized Dealer, the original retail customer must contact the Krystal Warranty Department to receive information and prior authorization for any needed repair work.

Provided that prior authorization was obtained from the Warranty Department of Krystal Enterprises, all labor costs associated with the repair or replacement of defective parts will be paid by Krystal. Krystal reserves the right to make a physical inspection of the bus by authorized factory personnel following any complaint prior to any repair.

Krystal shall have no liability for any defect or damage caused by the original owner's use of parts or services which are not authorized by Krystal or for any parts or paint which have been subject to misuse, neglect or accident, or have been subject to external mechanical or chemical influences, especially stone chips, airborne rust or industrial fall-out. This Limited Warranty **DOES NOT** cover loss to time. Inconvenience, loss of use of any vehicle, cost of rented replacement vehicle, or lodging or mileage expense in connection with any warranty repairs.

NO PERSON IS AUTHORIZED TO ALTER OR CHANGE IN ANY WAY
THE TERMS AND CONDITIONS OF THE ABOVE STATED LIMITED WARRANTY

Krystal Enterprises

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It is the policy of KRYSTAL ENTERPRISES, Inc. , to incorporate product improvements to our products whenever possible or practical to do so. We reserve the right to make changes and or improvements at any time without incurring any obligation to make such changes on previously sold products. Additionally, the information and specifications contained within this manual are current at time of printing. Subsequently all information contained in this manual is subject to change at any time, without notice.

Please note that this manual applies to all INTERNATIONAL models and explains standard equipment as well as many options, and may include equipment not presently installed on your vehicle.

KRYSTAL ENTERPRISES

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